91602
new 82-10

ontario hydro
research division

PC/FOCUS DATA BASE SYSTEM FOR THE METALLURGICAL RESEARCH DEPARTMENT USER'S GUIDE

Report No. 86-237-K

James Lizotte
Student
Nondestructive and Fracture Evaluation Section
Metallurgical Research Department

ABSTRACT

A data base system was developed for use in storage and quick retrieval of data used for the research purposes of the Metallurgical, Mechanical and Chemical Departments as well as CNS. This report offers an overview of the system and a reference to aid the user when utilizing the system.

job	file	date	report no.
750683-650-050	826.2	October 2, 1986	86-237-K

91602
new 82-10

ontario hydro
research division

EXECUTIVE SUMMARY

PC/FOCUS DATA BASE SYSTEM FOR THE METALLURGICAL RESEARCH DEPARTMENT USER'S GUIDE

J. Lizotte
Student
Nondestructive and Fracture Evaluation Section
Metallurgical Research Department

In order to provide an efficient and easily accessible data management scheme, a data base system was developed using pc/focus. Two existing data bases, a metal properties and a pressure tube data base were combined with a third data base. This new data base is a pressure tube properties data base. The three data bases and their support routines now form a fully operational, menu driven, user friendly data base system.

This report, in addition to offering a summary of the development of the data base system also provides a guide to aid the user in the understanding and use of the system.

JAB
AB

job	file	date	report no.
750683-650-050	826.2	October 2, 1986	86-237-K

TABLE OF CONTENTS

Page

INTRODUCTION 1
PREFACE 3

SECTION I: UNDERSTANDING FOCUS DATA BASES 5
AN INTRODUCTION TO DATA STRUCTURES 7
WHAT IS A FILE? 10
DATA FIELDS 11
DATA SEGMENTS 12
KEY FIELDS 13
UNIQUE SEGMENTS 16
DESCRIBING FOCUS FILES 19

SECTION II:GUIDE TO APPLICATIONS 23
WHAT CAN THE SYSTEM DO? 24
HOW TO USE THE SYSTEM 26

SECTION III:USING THE SYSTEM 31
INITIATING FOCUS 32
MAIN MENU 33
SUB-MENUS 34
FUNCTION ROUTINES 35
SPECIAL ROUTINES 40

SECTION IV: METAL PROPERTIES DATA BASE 43
FILE STRUCTURE(PICTURE) 44
FILE MASTER DESCRIPTION 45
LIST OF ROUTINES 48

SECTION V: PRESSURE TUBE PROPERTIES DATA BASE 126
FILE STRUCTURE(PICTURE) 127
FILE MASTER DESCRIPTION 128
LIST OF ROUTINES 129

SECTION VI:PRESSURE TUBE DATA BASE 174
FILE STRUCTURE(PICTURE) 175
FILE MASTER DESCRIPTION 176
LIST OF ROUTINES 178

SECTION VII:AUXILIARY ROUTINES 221

APPENDIX A 233

91601
new 82-10

ontário hydro
research division

To Dr. D. Mills
Director of Research

PC/FOCUS DATA BASE SYSTEM FOR THE METALLURGICAL RESEARCH DEPARTMENT
USER'S GUIDE

INTRODUCTION

The Research Division of Ontario Hydro has a vast supply of knowledge used for their research purposes. The data comes in various forms and from many sources which can lead to difficulty in searching for a particular item of interest. It was therefore proposed that a data base system would greatly aid in the purpose of data management and ease of data retrieval.

The task of initially developing the data base system was begun by a former student employee*. The development is now complete and the data base system is now fully operational. The system is comprised of the following components:

(1) A metals properties data base which consists of an array of various properties and characteristics of various alloys.

(2) A pressure tube data base which is made up of fields which correspond to data recorded for each individual pressure tube in all of the reactors in Ontario Hydro's nuclear generating stations.

(3) A newly developed pressure tube properties data base which contains data associated with various tests done to pressure tube specimens which have been removed from reactors.

(4) Application routines and menu driven screens to aid the user in utilizing the above mentioned data bases.

---

*A description of the initial development can be found in Ontario Hydro Research Division Report No. 85-253-K, "Focus/PC Focus Data Base Development for Metal Properties and Pressure Tube Data Bases", by Zintis Perkons.

In addition to the actual components of the system, this reference manual/user's guide was designed to complement the system.

This guide describes the usage and functions of the various components as well as the design of the system as a whole.

Approved:

James Brown

J. Brown
Manager
Metallurgical Research Dept

Prepared:

James Lizotte

J. Lizotte
Student
Nondestructive and Fracture
Evaluation Section

Reviewed:

J.A. Baron
Section Head
Nondestructive and Fracture
Evaluation Section

JL:SEH

PREFACE

PREFACE

The purpose of this guide is to attempt to sum up and tie together all the various uses, views and documentation associated with the pc/focus data base system designed for use by the CHEMISTRY, METALLURGY AND METALLURGICAL RESEARCH DEPARTMENTS as well as CENTRAL NUCLEAR SERVICES.

As a student. I was faced with continuing on with the work of former summer employees who had begun with the development of the data base system. Although documentation was provided, many details were left unmentioned and much had to be assumed. I can therefore appreciate the need for concise documentation.

This guide is an attempt to clarify as much as possible the structure, capabilities and uses of the data bases and support applications. The guide should provide a good introduction to the data base system as well as a reference guide when actually utilizing the system.

UNDERSTANDING FOCUS DATA BASES

UNDERSTANDING FOCUS DATA BASES

Focus data bases are very powerful and complex tools. They can provide a means of data management and data retrieval which is both quick and efficient. However as expected they do have limitations. In order to efficiently utilize the data bases the user must first understand some of the nuances of focus data bases and most importantly the perspective taken by the programmer. First an introduction into data structures is presented followed by a guide to interpreting the structure of focus data bases. It is strongly recommended that the user read through the aforementioned sections before attempting to use the data bases and their applications.

AN INTRODUCTION TO DATA STRUCTURES

The purpose of this section is to briefly introduce the user to a data structure used in the interpretation of focus data bases. In the interpretation a close parallel is made between focus files and the data structure known as a "tree"! The data structure known as a "tree" is described below.

TREE

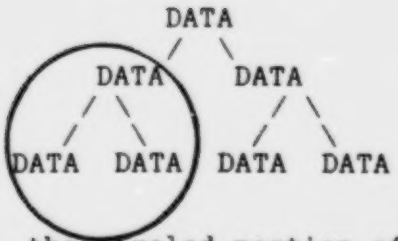
A tree is a data structure which begins at a root and branches out at each subsequent step away from the root.

```
      DATA
      /  \
     /    \
  DATA    DATA
```

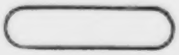
The tree however does not necessarily stop here. Each data item branching out from the root can in turn have data items branching out from it as well.

```
             DATA
             /  \
            /    \
       DATA        DATA
        /\          /\
       /  \        /  \
  DATA  DATA  DATA  DATA
```

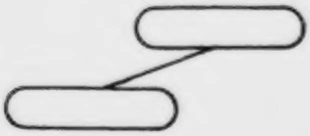
And so on . . . until a vast structure is created. So in fact by the above explanation a tree is actually comprised of many smaller trees.



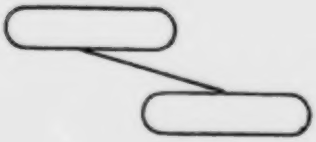
Clearly the circled portion of the above diagram is a tree in itself, but is also part of a much larger tree. These smaller trees within larger trees can cause some confusion. Therefore the following terms are introduced to aid in the understanding of trees.



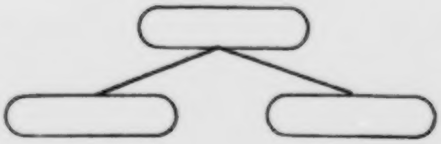
<== This symbol represents a particular data record which may be composed of one or more data items. This is also referred to as a NODE.



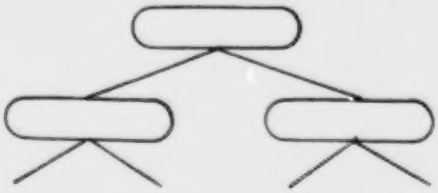
<== A node which has other nodes branching from it is known as a PARENT NODE.



<== A node which branches from another node is known as a CHILD NODE.



<== Two or more nodes branching from a common parent are known as SIBLING NODES.



<== A node without a parent but with children is known as the root of the tree. This node is the ultimate parent to all the other nodes in the tree. It can be thought of as the top or beginning of the tree.

(NOTE that for our purposes the tree is unconventional in that the root is at the top and the branches project downward from the root.)

Clearly a node can be a parent, child and sibling simultaneously depending upon the perspective taken. To aid with the perspective simply think of the tree as a FAMILY TREE. The perspective taken then depends upon the direction in which you are looking.

Look up to find parent node.(note that the root has no parent.)

Look to either side to find the sibling nodes.

Look down to find the child nodes.

Now that you are armed with this information and clearly understand it, you can now proceed to the description of the focus data base structure.

***** NOTE that the tree structure presented here differs from most tree designs in that the nodes in our tree are of variable size and format.

WHAT IS A FILE?

The word file can mean many different things to different people. Basically a file is a collection of data items arranged in some logical manner so as to be easily accessed. Many files contain only one type of data item (or record). An example of such a file is a list of names. This could be a list of clients, a guest list, etc. The data item is a name. The collection of these names are combined to form a file. This is probably the simplest form of a file. The files used in focus are much more complex. Thus we shall begin with the basic building block of a file and proceed to describe the much more complex focus files.

DATA_FIELDS

The basic building block of any file is the item or piece of data referred to as a data field. A data field is composed of certain basic attributes. These attributes describe the data field as it is used in the file.

In focus the attributes of a data field are as follows:

FIELD NAME ,	ALIAS,	FORMAT
assigns a name to the data field.	assigns an alias or shorter name to the data field.	describes the type of data to be contained in the field.

FORMAT TYPES:

character	An
integer	In
real	Fn.n

examples:

```
     (1)   FIELD=CUSTOMER_NAME , ALIAS=NAME, FORMAT= A20
     (2)   FIELD=AMOUNT_DUE, ALIAS= AMOUNT, FORMAT=F5.2
     (3)   FIELD=COUNT, , FORMAT=I4
```

(1) This describes a field for customer name which can be referred to as name. The field can contain a name up to 20 characters long.

(2) Describes a field for amount due which is also called amount. The field can hold a number up to 99.99 !

(3) This field is called count. It can accomodate an integer number up to 9999.

**NOTE the last example omits the alias attribute This is allowable if the field name is sufficiently concise and short and can not be represented in an easier form.

DATA SEGMENTS

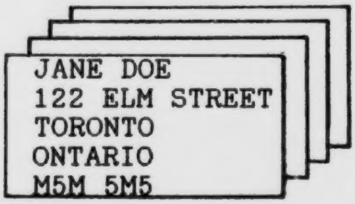
A file may consist of an array of data fields. These fields can be grouped into collections called segments. Segments usually contain data fields which are in some way related. This is also referred to as a data record. Data segments are given a name, the name is usually descriptive of the type of data contained in the segment.

EXAMPLE:

An example of a data segment could be a mailing address. The address consists of five data fields which are obviously all related to one another. The segment called ADDRESS would contain the following:

NAME
STREET
CITY
PROVINCE
POSTAL CODE

It is obvious that a file would contain more than one occurance of this segment. That is our file would contain more than one address. So we can see that segments are grouped together to form a file.

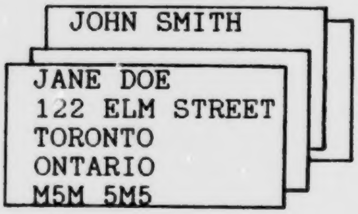


KEY FIELDS

The concept of segments just presented further complicates matters, and gives rise to the question: "HOW MAY DATA BE RETRIEVED WITHOUT SEQUENTIALLY READING THROUGH EACH ENTIRE SEGMENT ?"

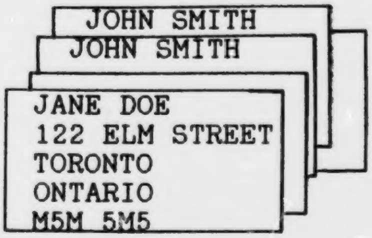
To enable fast retrieval of a particular segment when there are many segments of the same type present, a field called a key field is used to distingiush between the segments. Therefore when looking for a particular segment we need not read through each and every segment sequentially until we find the data we are looking for. We simply need to look at the key field.

In our example we could declare the name as the key field. If we want the address of JOHN SMITH we need only look at all the key fields until we find JOHN SMITH. Then we can extract the segment and retrieve all the information about JOHN SMITH.

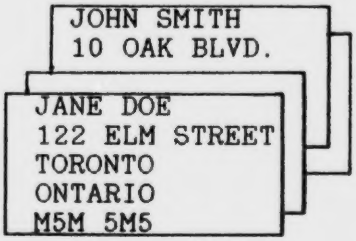


These key fields also allow the file to be sorted alphabetically, or numerically from high to low or low to high .. etc. You may be thinking " WHAT WOULD HAPPEN IF TWO PEOPLE SHARE THE SAME NAME?"

Very often data values are repeated and to distingiush them from one another it is necessary to have more then one key field. The segments can then be sorted as before but using one or more key fields. Returning to our example we may have found that two segments contained the name JOHN SMITH.

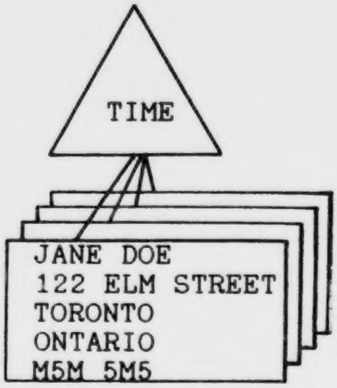

JOHN SMITH
JOHN SMITH
JANE DOE
122 ELM STREET
TORONTO
ONTARIO
M5M 5M5

We would have therefore designed our file with two key fields instead of just one. Our key fields could be name and street. Therefore when we wanted a particular address it would require knowledge of the two key fields identifying the particular data which we are looking for. For example we might desire the complete address of JOHN SMITH at 10 OAK BVLD. This would lead us to the specific segment which we wanted.

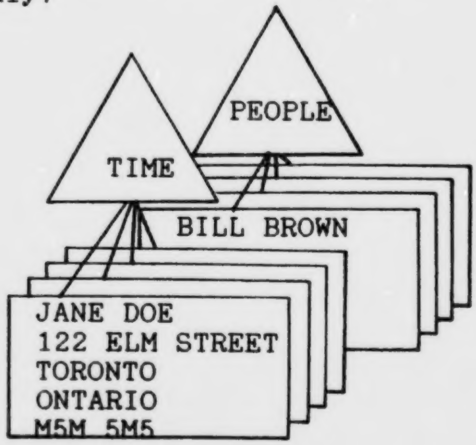

JOHN SMITH
10 OAK BLVD.
JANE DOE
122 ELM STREET
TORONTO
ONTARIO
M5M 5M5

So far we have dealt with a file containing only one type of segment (or record). Focus files however allow for combinations of many different segment types and sizes. In our example for instance we have only one segment type, that is we only have an address segment which is repeated many times to form a mailing list. This however may actually be only a small portion of the actual file. A particular collection of segments may extend as children from a higher level parent node. That is they all share some common attribute.

For instance, in our example the mailing list may be for a particular magazine subscription. Our file has now been extended.

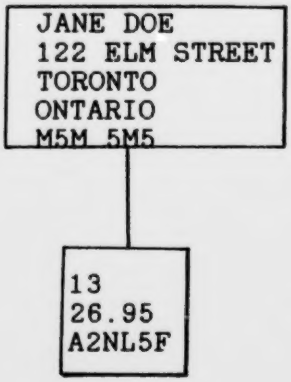

TIME
JANE DOE
122 ELM STREET
TORONTO
ONTARIO
M5M 5M5

Our mailing list is now a mailing list of subscribers to time magazine. We now have a new segment type called magazine which contains a field with the title of the magazine and other pertinent data. The address segments all share a common parent , that is they are all children of the magazine segment for TIME. The magazine segment more than likely is also repeated to include other magazines, so that our file is expanding rapidly.

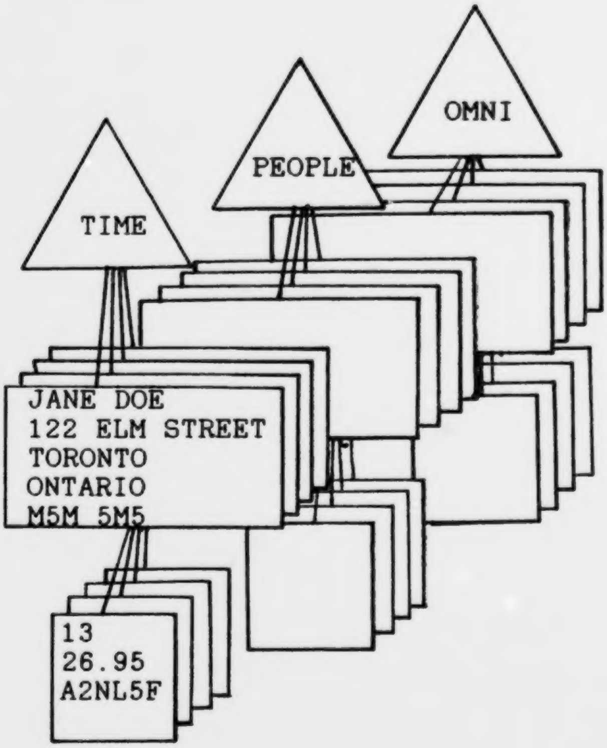

PEOPLE
TIME
BILL BROWN
JANE DOE
122 ELM STREET
TORONTO
ONTARIO
M5M 5M5

Thus far we have dealt with segments that repeat or have multiple members. This however is not always the case. We know that a segment can stand alone (a root for instance). A segment can also be an only child. This type of segment is referred to as a unique segment. A unique segment has no siblings because the data found in the segment can only have one possible value associated with its parent. To clarify this let's look at our example once more.

Suppose that for each customer in the mailing list there exists a segment to describe the customer's subscription. This could include information about the number of issues ordered, amount due , account number . . etc. Clearly this segment would be unique because a customer only has one account description for each magazine subscription.



This leads to a very detailed and complex file hierarchy as pictured below:


OMNI
PEOPLE
TIME
JANE DOE
122 ELM STREET
TORONTO
ONTARIO
M5M 5M5
13
26.95
A2NL5F

It is now no doubt easy to see that a focus file can be thought of as a collection of trees. In focus there may or may not be one main root. This depends entirely on the programmer's design specifications.

To review some of the concepts just presented here is a summary:

A FILE	is a collection of data items arranged in some logical manner so as to allow for easy access.
DATA FIELD	is a particular item of data which corresponds to a given set of attributes (i.e. size,type etc.)
DATA SEGMENT	is a collection of data items or fields which are in some way related to one another and are therefore grouped together to form a segment (or record).
KEY FIELD(S)	are field(s) used in obtaining quick access to a particular segment. These fields are also used when sorting the segments (i.e from high to low order).

- A segment can be repeated many times or can have only one occurance - called a unique segment.
- A group of segments can branch from a common parent segment to form a vast complex file.

DESCRIBING FOCUS FILES

Now that you understand the structure of a focus file, it is important to study the actual coding used in describing the structure of the files in focus. This knowledge will aid in the study of the applications presented later. To begin we will code the example which we have been following throughout this guide.

In order to code our file as a focus file we would write a master description as follows.

```
(1)   FILE=SUBSCRIP,SUFFIX=FOC,$

(2)      SEGNAME=MAGAZINE,SEGTYPE=S1,$

            FIELD=MAGTITLE,   ALIAS=TITLE, FORMAT=A20,$
            FIELD=PUBLISHER,  ALIAS=PUB,   FORMAT=A20,$
            FIELD=SUB_RATES,  ALIAS=RATES, FORMAT=A60,$

(3)     SEGNAME=CUSTOMER,PARENT=MAGAZINE,SEGTYPE=S2,$

            FIELD=FULLNAME,   ALIAS=NAME,  FORMAT=A20,$
            FIELD=STREETNUM,  ALIAS=STREET,FORMAT=A25,$
(4)         FIELD=CITY,          ,         FORMAT=A15,$
            FIELD=PROVINCE,   ALIAS=PROV,  FORMAT=A25,$
            FIELD=POSTCODE,   ALIAS=CODE,  FORMAT=A6,$

(5)    SEGNAME=CUST_INF,PARENT=CUST,SEGTYPE=U,$

            FIELD=ISSUES,        ,         FORMAT=I2,$
            FIELD=AMOUNT_DUE, ALIAS=DUE,   FORMAT=F5.2,
            FIELD=ACCNT_NUM,  ALIAS=NUM,   FORMAT=A6,$
```

<u>NOTES</u>

(1) Note that the file name is part of the file description, also the phrase SUFFIX=FOC tells focus that we are creating a focus data base.

(2) The segment is given a name (as discussed earlier). Also the phrase SEGTYPE=S1 means that the first field in the segment will be the keyfield and the segments will be sequenced logically in low-to-high order.

(3) The phrase PARENT=MAGAZINE creates the tree hierarchy, causing the customer segments to become children of the magazine segment.

(4) Note that the alias is left out of this field description.(this was done by choice because the fieldname was sufficiently short and concise).

(5) Notice that the SEGTYPE=U implying of course that the segment is unique.

We can now investigate the manner in which focus presents the file to us. Upon issuing the focus command CHECK FILE SUBSCRIP PICTURE focus will return the following:

```
     NUMBER OF ERRORS=     0
     NUMBER OF SEGMENTS=  3 (REAL=     3, VIRTUAL=   0)
     NUMBER OF FIELDS=   11 INDEXES=  0  FILES=      1
     TOTAL LENGTH OF ALL FIELDS= 204

     SECTION 01.01
         STRUCTURE OF FOCUS  FILE SUBSCRIP ON 07/11/86 09.31.27

             MAGAZINE  (1)
(2)   01     S1        (3)
     **************
     *MAGTITLE    **
     *PUBLISHER   **
     *SUB_RATES   **
     *            **
     *            **
     ***************
      **************
           I
           I
           I
           I CUSTOMER
      02   I S2        (4)
     **************
     *FULLNAME    **
     *STREETNUM   **   (6)
     *CITY        **
     *PROVINCE    **
     *            **
     ***************
      **************
           I
           I
           I
           I CUST_INF
      03   I U         (5)
     **************
     *ISSUES      *
     *AMOUNT_DUE  *
     *ACCNT_NUM   *
     *            *
     *            *
     **************
```

NUMBERS IN PARENTHESES REFER TO NOTES ON NEXT PAGE.

NOTES

(1) The segment name is printed in the upper right hand corner of each segment.

(2) Focus numbers the segments in the upper left hand corner according to their appearance in the file description which the programmer writes (page 20).

(3)(4)(5) The segment type appears in the upper right hand corner of each segment, directly below the segment name.

(6) The picture displays a subset of the first four fields which appear in each segment.

Note also that the first two segments appear to have superimposed lines around them. This gives the appearance of multiple occurances of the segments and helps to distinguish them from unique segments.

GUIDE TO APPLICATIONS

WHAT CAN THE SYSTEM DO?

The first question to deal with is the question "WHAT DOES THE PC/FOCUS DATA BASE SYSTEM FOR THE METALLURGICAL RESEARCH DEPARTMENT DO?"

The obvious answer is that it provides a quick and convient tool to manage and retrieve data. This however does not really explain its usage, therefore a listing of the functions of the data base system is provided below:

BROWSING	The three data bases are all accompanied by customized browse routines which allow for sequential browsing through the data from the top (root) to the bottom child.
ADDING DATA	Data records (or segments) can be added to any one of the data bases via their input routines.
DELETING DATA	Deletion routines are provided to enable the deletion of entire segments of data.
UPDATING/CHANGING	These routines allow for the changing of individual field values in the data bases. These routines are especially useful in correcting values entered erroneously.
PRODUCE REPORTS	There are included simple programs which allow the user to request specific fields and values and have them printed in a report style. Also included is an interface between the menus and the focus routine TABLETALK which allows the user to create a report request interactively.

DATA BASE BACKUP	Builtin routines instruct the user on how to create a backup copy of the data base on a diskette.(* NOTE because of the potential for growth of the data bases, it is possible for the data bases to become too massive to store on a floppy.)
DATA BASE RECOVERY	These routines allow for recovery of the data base in the event of accidental deletion or destruction of all or part of the data base. The recovery is via the backup copy on diskette.(provided a backup copy was created.)
MOVING/COPYING	The applications include a routine to make a copy of the applications and data base file descriptions. (the actual data bases can be copied via their individual menus provided they are not too vast.) This copy can be used as a backup or used to copy applications onto another pc which supports pc/focus.

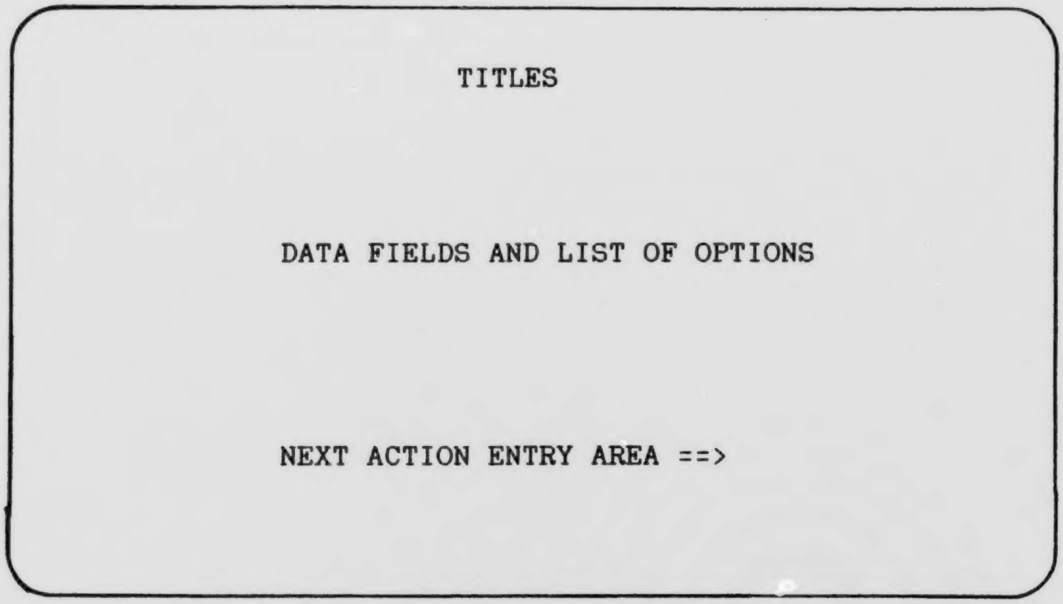
The above applications will be discussed in greater detail in later sections.

HOW TO USE THE SYSTEM

The data base system was set up to allow easy access to all the routines via user friendly menu driven screens. The screens display all the options to the user , and the user is prompted to enter his/her choice.

All the menus and routines are linked together. This enables control to return to the menus after completion of execution of a particular routine. Many of the screens can be expanded to display instructions to the user by simply pressing the function keys pf8 and pf7 when instructed.

Here is an example of the basic screen layout.

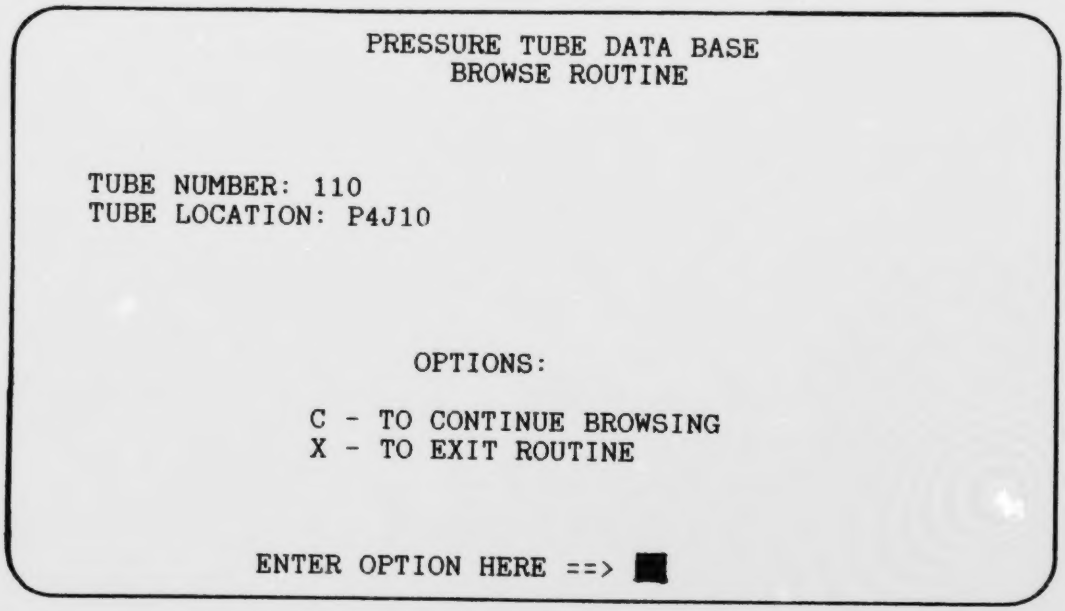


A DESCRIPTION OF THE SCREEN IS FOUND ON THE NEXT PAGE.

TITLES	- explain which routine you are in, which data base you are working with etc.
DATA_FIELDS	- can include the following: -fields which you can view only. -fields which you can view and update/change. -blank fields which you are to fill in.
LIST_OF_OPTIONS	-guides the user as to the choice of directions he/she has in continuing.
NEXT_ACTION_ENTRY_AREA	-most screens include a section where the next requested option is to be entered. This causes branching to the appropriate routine.

When a screen contains data to view only then the cursor appears at the section designated to enter the next option. The user may then examine the data at his/her leisure, choose an option and type it in then press enter to proceed with the option chosen.

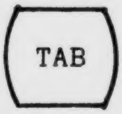
ex:



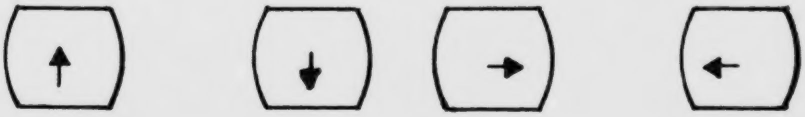
```
                 PRESSURE TUBE DATA BASE
                     BROWSE ROUTINE


   TUBE NUMBER: 110
   TUBE LOCATION: P4J10



                        OPTIONS:

                C - TO CONTINUE BROWSING
                X - TO EXIT ROUTINE


            ENTER OPTION HERE ==> ■
```

■ =CURSOR

The screens which allow for updates or input are slightly different. The cursor is at the first field available for input. The input screens will contain blank fields which are to be filled in , while the update fields will display the current values of the fields which can be simply written over. The user may enter data at this location or use the tab key:

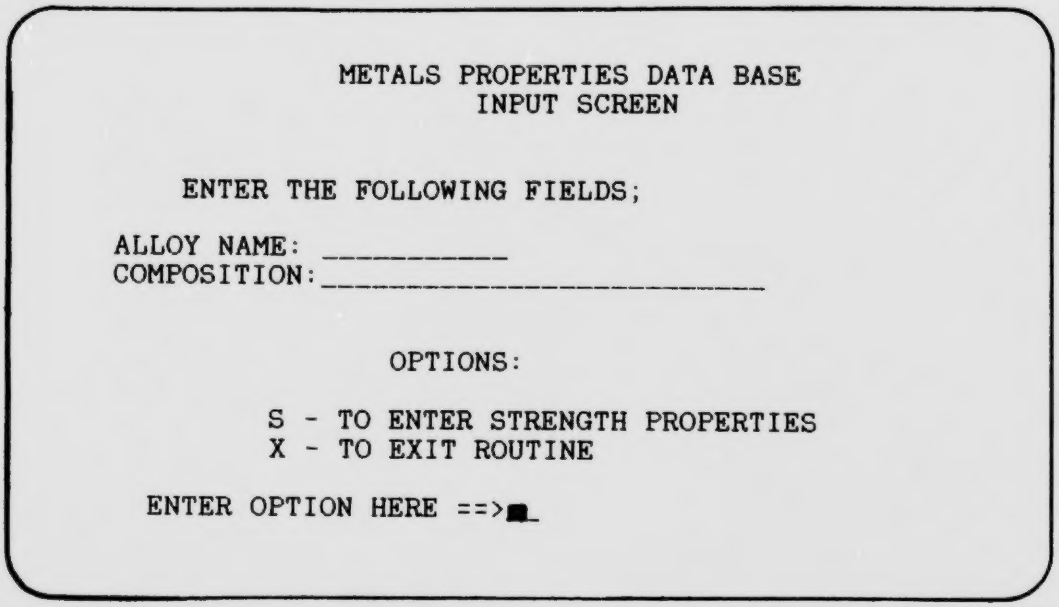


or cursor control keys



to move from field to field as desired. Upon completion of input and/or update the user should move the cursor to the option field, type in the desired option and press enter.

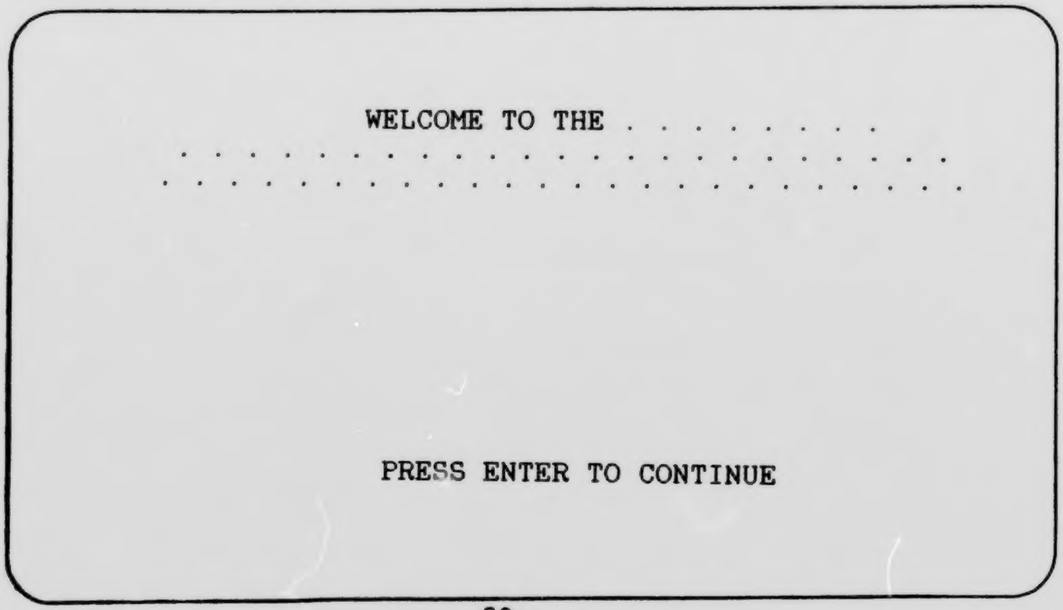
IMPORTANT - It is important to note that enter must only be pressed when all fields have been filled as desired and not after filling each field. Pressing enter causes the present screen to be entered as completed and the next screen appears. Therefore the user must quickly learn the importance of using the tab and cursor control keys.



```
                    METALS PROPERTIES DATA BASE
                           INPUT SCREEN


     ENTER THE FOLLOWING FIELDS;

  ALLOY NAME: ___________
  COMPOSITION:___________________________


                        OPTIONS:

              S - TO ENTER STRENGTH PROPERTIES
              X - TO EXIT ROUTINE

    ENTER OPTION HERE ==>■_
```

■=CURSOR

Another type of screen is the text or instruction screen. These screens do not allow for any input as they are solely designed to be read. The user may simply read the screen and press enter to continue on with execution of the routine.



```
                    WELCOME TO THE . . . . . . . . .
          . . . . . . . . . . . . . . . . . . . . . . . . .
         . . . . . . . . . . . . . . . . . . . . . . . . . .




                     PRESS ENTER TO CONTINUE
```

USING THE SYSTEM

USING THE SYSTEM

The following is a step by step guide to using the data base system for the metallurgical research department. This guide will explain the initial entrance into the system, the main menu and then the three menus corresponding to the data bases. So let's begin.

INITIATING FOCUS

To use the data base system, the user must first enter the into the focus environment **. The process of entering focus is described in the following four steps.

(1) Turn on the machine.

(2) Enter into the focus sub-directory by typing CD FOCUS and pressing enter.

(3) Insert the focus activator disk (identified by a red dot on the disk) into drive a.

(4) Issue the command FOCUS and press enter.

Focus has now been activated and the data base system will be invoked. The data base system is invoked automatically by a file named PROFILE.FEX. This file is executed upon entering focus and it will prompt the user for a password.

The password will allow only those users who are so authorized to gain access to the data bases. A password restriction is a very important aspect when attempting to maintain data integrity and reliability.

The user need simply type in a valid password *** and press enter to continue. An invalid password will simply cause the password screen to reappear. This will continue three times then the system will return to DOS upon failure by the user to enter a valid password.

** This requires a PC which has had PC/FOCUS software installed.
*** To issue or change a password see appendix A.

MAIN MENU

Upon entering a valid password, the database system main menu screen will appear. This menu allows the user to choose one of many options which are presented below.

(1) The user can gain access to any one of the three sub-menus corresponding to the three data bases.

(2) A brief set of instructions are provided which the user may choose to view.

(3) Create a copy of the data base system for backup or for use elsewhere.

(4) Exit the data base system. (EXIT TO DOS)

The user need simply type in the letter corresponding to his/her desired choice of action and press enter. The routine will branch appropriately.

SUB-MENUS

The sub-menus provide a means by which to execute the various routines to provide the desired functions to the data bases. Each sub-menu consists of a list of options and routines which can be invoked by choosing the appropriate letter and entering it in the space provided. The sub-menu will automatically execute the chosen option and control will return to the sub-menu upon completion of the chosen option.

The functions provided vary slightly but are basically as described earlier. These include:

INPUTTING SEGMENTS
DELETING SEGMENTS
UPDATING DATA
BROWSING DATA BASE
DATA BASE BACKUP
DATA BASE RECOVERY

These routines are explained in detail in the sections that follow.

FUNCTION_ROUTINES

The support routines for the three data bases are all based on the same principles. Although the screens are basically self descriptive, a brief outline is given below for each type of routine. These descriptions can be applied to the routines for each of the three data bases.

(1) INPUT_NEW_RECORDS

The input routines generally prompt the user to input one segment at a time. The user simply fills in the fields as prompted and presses enter when complete. Of course there are variations in the structure of the data bases so some branching options are provided. For instance, after inputting a segment the routine may ask if you wish to input the child segments associated with the data you have just entered or another set of the same data fields that you have just entered.(i.e in terms of trees, you may enter a child or a sibling segment of the segment you have just entered.) The routines input segments from the root to the final child and back to the root again until the user enters "END" in one of the fields or chooses the "x - to exit" option. These options return execution to the sub-menu.

(2) BROWSE_ROUTINES

The browse routines are all basically sequential views of the data base. The user is given choices as to the direction of view. That is the user can choose to view each parent and all its children or can simply view a certain segment type moving across its sibling segments. Another option is to view a few segments and then exit the routine.

(3) CHANGE/UPDATE RECORDS

The basic idea behind the update routines is that the user should know in advance which fields require update. Knowing this then the user can enter the key fields associated with the data in question.

(The user should note that the key fields can not be updated or changed. This is obvious when you consider the following. The segments are sorted according to the key fields. Therefore if you extract a segment , change the key field and replace it into its original place, the segments are no longer in sorted order. Focus therefore does not allow the key fields to be changed. If a key field is no longer correct, then the user may simply choose to delete the segment in question and re-enter it with the corrected key field value.)

Upon entering the key fields as prompted, the fields associated with these particular key fields are displayed. The user may change the non-key fields by simply writing the new values over them. After changing/updating the fields , the user presses enter and the new values are entered into the data base in place of the old values.

**NOTE that because of the complexity of the metal properties data base, its update routine allows for the addition of new segments as well as updating existing segments.

(4) DELETE SEGMENTS/ENTIRE RECORDS

Much like the update routines, the deletion routines assume that the user knows which particular data is to be deleted. Knowing this , the user can enter the key fields identifying the segment to be deleted.

The discusion about trees presented earlier becomes very useful now. We can see that if we choose to delete a segment which has children, the children will also be deleted. Clearly it is not possible to take a slice out of a tree and expect the branches to stay attached.

```
                                               DATA
                                              /    \
                                             /      \
IF WE DELETE THIS NODE(SEGMENT)==>  DATA          DATA
                                    /  \          /  \
                                DATA   DATA DATA   DATA
```

THE CHILDREN WILL ALSO BE DELETED RESULTING IN THIS TREE:

```
      DATA
          \
           \
            DATA
            /  \
        DATA    DATA
```

Because of the finality of deletions, the deletion routines contain many screens to reiterate to the user the option he/she is choosing. This allows for the user to double check his/her entries and possibly to exit from the routine to avoid unwarranted deletions.

(5) CREATE A BACKUP DISKETTE OF THE DATA BASE

Due to the nature of micro system's disk storage, it is quite possible for the data base(s) to suffer from irreparable damage or possible deletion. This creates the need for a backup/recovery system to ensure data security.

It is therefore suggested that a backup copy of the data base should be created at regular intervals. The routines are self explanatory, prompting the user as to when and where to insert the disk.

(6) RECOVERY OF DATA BASE VIA BACKUP DISKETTE

Following the reasoning of the above explanation, it follows that there should be a routine to recover the data base in case of accidental loss.

The recovery is just a reloading of the data base and master description via the backup copy. Obviously if a backup copy was not created then the data base can not be recovered. The routines are straight forward involving simply inserting a diskette and pressing enter as instructed.

(7) PREPARING DETAILED REPORTS

This option is simply a link between the menu and the pc/focus function known as TABLETALK. Tabletalk allows the user to create report requests interactively by means of windows or subsections which instruct the user as to his/her choices.

(8) MOVING/COPYNG APPLICATIONS

These routines allow for a copy of the applications to be made. This copy can be used as a backup copy in case of system failure. The copy can also be used when settng up the system onto another pc equipped with pc/focus.

The routines copy a set of applications onto a diskette and allow the user to obtain a hardcopy of instructions to accompany the diskette. These routines lead the user step by step through the process, with instructions as to when and where to insert the diskettes.

The main menu version of the copy routine copies all the application routines as a system but not the actual data bases. The data bases can be copied via their individual backup routines in the sub-menus.

The sub-menu version copies the individual data bases and support applications. The sub-menu and a profile file are copied and upon following the instructions provided, the user can set up the individual data bases as a system on their own.

SPECIAL ROUTINES

Included in the sub-menus as well as the routines explained above also some special routines which are exclusive to them. Descriptions of these routines are described below.

(PRESSURE TUBE PROPERTIES DATA BASE)

REFERENCE ROUTINE - The pressure tube properties data base was set up as a collection of trees which are considered mutually exclusive. That is you generally only use one tree at a time. This is the reasoning behind the applications. It is therefore necessary to choose a particular reference item. This routine is invoked automatically when choosing any of the options , 1-4 on the pressure tube properties data base sub-menu. The routine will produce a list of the possible reference choices, If so desired, and then the user is prompted to enter his/her choice. This reference item becomes the root and you will have chosen a tree which you wish to work with.

(METAL PROPERTIES DATA BASE)

PREPARING A REPORT - This is a "homemade, simpler" version of TABLETALK. A sample report appears on the screen. The user can tab over it changing any of it as desired and pressing enter to execute it. The screen will re-appear after execution allowing for further modifications. This is repeated until the desired report is obtained or the user chooses the "exit" option. The user may also choose to obtain a hardcopy of the report.

(PRESSURE TUBE DATA BASE)

RETRIEVE DATA - This option is another case as described above. The routine simply aids the user in preparing simple reports.

CUSTOMIZED GRAPHING - This routine allows the user to dynamically create a graph request. The user is given a choice of graphing modes. Upon choosing one (ex. bar graph) the user is prompted to choose the fields he/she wishes to be graphed. The graph is then displayed and then the user can request another graph, and so on until the "exit" option is chosen.

INPUT NEW RECORDS (FILE) - This routine inputs data into the pressure tube data base from a file called TUBEDATA. The file contains data entered via ONTARIO HYDRO'S DATA ENTRY POOL SERVICE. This file is found on the IBM mainframe and must be downloaded ** onto the pc before execution of the routine.

REMOVE PRESSURE TUBE - The purpose of this routine is to allow for the removal of a pressure tube from the pressure tube data base. The user is prompted to enter the ingot number , tube number and position. Upon doing so all the data associated with the pressure tube is transferred to another data base called PMOVE. The pressure tube data is then deleted from the pressure tube data base. This routine was designed to accomodate removal of pressure tubes from reactors.

** For a description of downloading files see report no. 85-253-K FOCUS/PC FOCUS DATA BASE DEVELOPMENT FOR METAL PROPERTIES AND PRESSURE TUBE DATA BASES by ZINTIS PERKONS. See appendix VII which discusses communications between FOCUS and PC/FOCUS.

THE DATA BASES

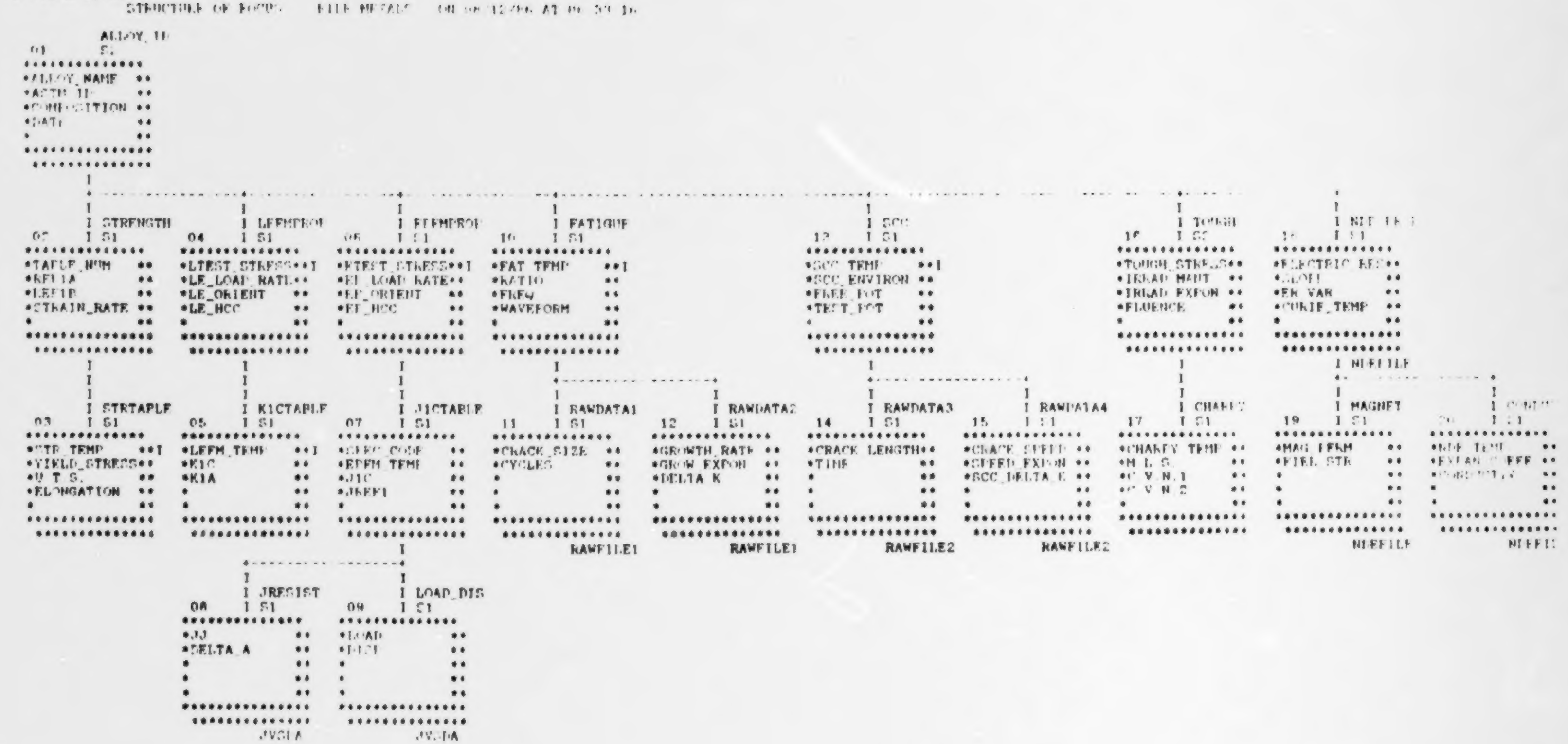
The following sections present the applications and data base descriptions for use in further understanding the system.

Each section presents a picture of the data base structure (obtained by the focus command CHECK FILE filename PICTURE). This picture aids the user in understanding the hierarchy and structure of each data base.

Also presented in each section is a listing of the master description for each data base. This master description outlines the fieldnames, segment names and the relationship between segments.

Finally listings of all the routines are presented. These listings are provided for reference purposes in the event of confusion during execution of a certain routine. The listings will also aid in the event of any modifications which may be required to a certain routine(s).

METAL PROPERTIES DATA BASE

STRUCTURE OF FOCUS FILE METALS
ALLOY_ID
01 S1
ALLOY_NAME
ASTM_ID
COMPOSITION
DATE
02 STRENGTH S1
TABLE_NUM
REF1A
REF1B
STRAIN_RATE
04 LEFMPROP S1
LTEST_STRESS
LE_LOAD_RATE
LE_ORIENT
LE_HCC
06 EFEMPROP S1
ETEST_STRESS
EF_LOAD_RATE
EF_ORIENT
EF_HCC
10 FATIGUE S1
FAT_TEMP
RATIO
FREQ
WAVEFORM
13 SCC S1
SCC_TEMP
SCC_ENVIRON
FREE_POT
TEST_POT
16 TOUGH
TOUGH_STRESS
IRRAD_MAGT
IRRAD_EXPON
FLUENCE
18 S1
ELECTRIC_RES
ER_VAR
CURIE_TEMP
NEEFILE
03 STRTABLE S1
STR_TEMP
YIELD_STRESS
U_T_S.
ELONGATION
05 K1CTABLE S1
LEFM_TEMP
K1C
K1A
07 J1CTABLE S1
EFEM_TEMP
J1C
JREF1
11 RAWDATA1 S1
CRACK_SIZE
CYCLES
RAWFILE1
12 RAWDATA2 S1
GROWTH_RATE
GROW_EXPON
DELTA_K
RAWFILE1
14 RAWDATA3 S1
CRACK_LENGTH
TIME
RAWFILE2
15 RAWDATA4 S1
CRACK_SPEED
SPEED_EXPON
SCC_DELTA_K
RAWFILE2
17 CHARPY S1
CHARPY_TEMP
M_L_S.
C_V_N_1
C_V_N_2
19 MAGNET S1
MAG_PERM
FIEL_STR
NEEFILE
20 S1
EXPAN_COEFF
NEEFILE
08 JRESIST S1
JJ
DELTA_A
JVSDA
09 LOAD_DIS S1
LOAD
JVSDA

```
FILE=METALS, SUFFIX=FOC, $
 SEGNAME=ALLOY_ID, SEGTYPE=S2, $
  FIELD=ALLOY_NAME, ALIAS=NAME, FORMAT=A25, $
  FIELD=ASTM_ID,       ALIAS=ID,        FORMAT=A10, $
  FIELD=COMPOSITION,   ALIAS=CHEMISTRY, FORMAT=A72, $
  FIELD=DATE,          ,                FORMAT=I6YMDT, $
  FIELD=REMARKS1,      ,                FORMAT=A60, $
  FIELD=REMARKS2,      ,                FORMAT=A60, $
  FIELD=NEXT_TABLE, , I4, $
 SEGNAME=STRENGTH, PARENT=ALLOY_ID, SEGTYPE=S1,$
  FIELD=TABLE_NUM, TABLE_NO,            FORMAT=I4, $
  FIELD=REF1A,         ,                FORMAT=A60, $
  FIELD=REF1B,         ,                FORMAT=A60, $
  FIELD=STRAIN_RATE,   ALIAS=SR,        FORMAT=F6.3, $
 SEGNAME=STRTABLE, PARENT=STRENGTH, SEGTYPE=S1, $
  FIELD=STR_TEMP,      ALIAS=S_TEMP,  FORMAT=F6.1, INDEX=I, $
  FIELD=YIELD_STRESS, ALIAS=YS,       FORMAT=F6.1, $
  FIELD=U.T.S.,        ALIAS=UTS,     FORMAT=F6.1, $
  FIELD=ELONGATION,    ,              FORMAT=F4.1, $
  FIELD=REDUC_AREA,    ALIAS=RA,      FORMAT=F4.1, $
  FIELD=YOUNGS_MAN,    ALIAS=YM_MAN, FORMAT=F4.2, $
  FIELD=YOUNGS_EXP,    ALIAS=YM_EXP, FORMAT=I3, $
 SEGNAME=LEFMPROP, PARENT=ALLOY_ID, SEGTYPE=S1, $
  FIELD=LTEST_STRESS, ALIAS=LESTRESS, FORMAT=F6.1,INDEX=I,$
  FIELD=LE_LOAD_RATE, ALIAS=LERATE, FORMAT=F8.1C, $
  FIELD=LE_ORIENT,     ,              FORMAT=A12, $
  FIELD=LE_HCC,        ,              FORMAT=F5.3, $
  FIELD=LE_H_CON,      ,              FORMAT=F5.1, $
  FIELD=LE_REF1,       ,              FORMAT=A60, $
  FIELD=LE_REF2,       ,              FORMAT=A60, $
  FIELD=LE_HARDNESS,   ALIAS=HARD1,   FORMAT=F9.2C, $
  FIELD=SCALE1,        ,              FORMAT=A12, $
  FIELD=ASTMGRAINSZ1, ALIAS=GRAIN1, FORMAT=I2, $
 SEGNAME=K1CTABLE, PARENT=LEFMPROP, SEGTYPE=S1, $
  FIELD=LEFM_TEMP,     ALIAS=L_TEMP, FORMAT=F6.1, INDEX=I, $
  FIELD=K1C,           ,              FORMAT=F6.2, $
  FIELD=K1A,           ,              FORMAT=F6.2, $
 SEGNAME=EPFMPROP,PARENT=ALLOY_ID, SEGTYPE=S1, $
  FIELD=ETEST_STRESS, ALIAS=EPSTRESS, FORMAT=F6.1, INDEX=I,$
  FIELD=EP_LOAD_RATE, ALIAS=EPRATE, FORMAT=F8.1C, $
  FIELD=EP_ORIENT,     ,              FORMAT=A12, $
  FIELD=EP_HCC,        ,              FORMAT=F5.3, $
  FIELD=EP_H_CON,      ,              FORMAT=F5.1, $
  FIELD=EP_REF1,       ,              FORMAT=A60, $
  FIELD=EP_REF2,       ,              FORMAT=A60, $
  FIELD=EP_HARDNESS,   ALIAS=HARD2,   FORMAT=F9.2C, $
  FIELD=SCALE2,        ,              FORMAT= A12, $
  FIELD=ASTMGRAINSZ2, ALIAS=GRAIN2, FORMAT=I2, $
 SEGNAME=J1CTABLE, PARENT=EPFMPROP, SEGTYPE=S1, $
  FIELD=SPEC_CODE,     ALIAS=CODE,    FORMAT=A10, $
  FIELD=EPFM_TEMP,     ALIAS=E_TEMP, FORMAT=F6.1, $
  FIELD=J1C,           ,              FORMAT=F6.2, $
  FIELD=JREF1,         ,              FORMAT=A60, $
  FIELD=JREF2,         ,              FORMAT=A60, $
```

```
SEGNAME=JRESIST, PARENT=J1CTABLE, SEGTYPE=S,
   LOCATION=JVSDA, $
 FIELD=JJ,              ,              FORMAT=F8.4,$
 FIELD=DELTA_A,         ALIAS=DA,      FORMAT=F9.5,$
SEGNAME=LOAD_DIS, PARENT=J1CTABLE, SEGTYPE=S,
   LOCATION=JVSDA, $
 FIELD=LOAD,            ,              FORMAT=F6.3, $
 FIELD=DISP,            ,              FORMAT=F6.3, $
SEGNAME=FATIGUE, PARENT=ALLOY_ID, SEGTYPE=S1, $
 FIELD=FAT_TEMP,        ALIAS=FTEMP,   FORMAT=F6.1, INDEX=I, $
 FIELD=RATIO,           ALIAS=PMINPMAX, FORMAT=F5.2, $
 FIELD=FREQ,            ,              FORMAT=F8.3C, $
 FIELD=WAVEFORM,        ,              FORMAT=A12, $
 FIELD=ENVIRON,         ,              FORMAT=A20, $
 FIELD=FAT_ORIENT,      ALIAS=FORIENT, FORMAT=A12, $
 FIELD=CC_MAN,          ALIAS=CMAN,  FORMAT=F5.3, $
 FIELD=CC_EXPON,        ALIAS=CEXP,    FORMAT=I3, $
 FIELD=MM,              ,              FORMAT=F9.4C, $
 FIELD=LOWK,            ,              FORMAT=F6.2, $
 FIELD=HIGHK,           ,              FORMAT=F6.2, $
 FIELD=FAT_REF1,        ,              FORMAT=A60, $
 FIELD=FAT_REF2,        ,              FORMAT=A60, $
SEGNAME=RAWDATA1, PARENT=FATIGUE, SEGTYPE=S1,
   LOCATION=RAWFILE1, $
 FIELD=CRACK_SIZE,      ALIAS=A_POINT, FORMAT=F5.2, $
 FIELD=CYCLES,          ALIAS=N_POINT, FORMAT=I5, $
SEGNAME=RAWDATA2, PARENT=FATIGUE, SEGTYPE=S1,
   LOCATION=RAWFILE1, $
 FIELD=GROWTH_RATE,  ALIAS=DA_DN,  FORMAT=F5.3, $
 FIELD=GROW_EXPON,   ALIAS=POWER,  FORMAT=I3, $
 FIELD=DELTA_K,         ,              FORMAT=F6.2, $
SEGNAME=SCC, PARENT=ALLOY_ID, SEGTYPE=S1, $
 FIELD=SCC_TEMP,        ,              FORMAT=F6.1, INDEX=I, $
 FIELD=SCC_ENVIRON,,                   FORMAT=A20, $
 FIELD=FREE_POT,        ,              FORMAT=I3, $
 FIELD=TEST_POT,        ,              FORMAT=I3, $
 FIELD=KISCC,           ,              FORMAT=F6.2, $
 FIELD=K1H,             ,              FORMAT=F6.2, $
 FIELD=SCC_HCC,         ALIAS=SH,      FORMAT=F5.3, $
 FIELD=SCC_H_CON,       ,              FORMAT=F5.1, $
 FIELD=VELOCITY,        ,              FORMAT=F5.3, $
 FIELD=VELOC_EXPON,,                   FORMAT=I3, $
 FIELD=THERM_HIST,      ALIAS=THIST,   FORMAT=A72, $
 FIELD=IRRAD_HIST,      ALIAS=IHIST,   FORMAT=A72, $
 FIELD=SCC_REF1,        ,              FORMAT=A60, $
 FIELD=SCC_REF2,        ,              FORMAT=A60, $
SEGNAME=RAWDATA3, PARENT=SCC, SEGTYPE=S1,
   LOCATION=RAWFILE2, $
 FIELD=CRACK_LENGTH, ALIAS=A_VALUE, FORMAT=F5.2, $
 FIELD=TIME,            ALIAS=T_VALUE, FORMAT=F7.1C, $
SEGNAME=RAWDATA4, PARENT=SCC, SEGTYPE=S1,
   LOCATION=RAWFILE2, $
 FIELD=CRACK_SPEED,  ALIAS=DA_DT,  FORMAT=F5.3, $
 FIELD=SPEED_EXPON,   ALIAS=POWER,  FORMAT=I3, $
```

```
   FIELD=SCC_DELTA_K,      .               FORMAT=F6.2, $
  SEGNAME=TOUGH, PARENT=ALLOY_ID, SEGTYPE=S2, $
   FIELD=TOUGH_STRESS, ALIAS=TYS,     FORMAT=F6.1, $
   FIELD=IRRAD_MANT,   ALIAS=MANTISSA, FORMAT=F4.2, $
   FIELD=IRRAD_EXPON,  ALIAS=EXPONENT, FORMAT=I3, $
   FIELD=FLUENCE,      ,              FORMAT=A12, $
   FIELD=N.D.T.,       ALIAS=NDT,     FORMAT=F6.1, $
   FIELD=F.A.T.T.,     ALIAS=FATT,    FORMAT=F6.1, $
   FIELD=TOUGH_REF1,   ,              FORMAT=A60, $
   FIELD=TOUGH_REF2,   ,              FORMAT=A60, $
  SEGNAME=CHARPY, PARENT=TOUGH, SEGTYPE=S1, $
   FIELD=CHARPY_TEMP,  ALIAS=CH_TEMP, FORMAT=F5.1, $
   FIELD=M.L.S.,       ALIAS=MLS,     FORMAT=F5.3, $
   FIELD=C.V.N.1,      ALIAS=CVN1,    FORMAT=F6.2, $
   FIELD=C.V.N.2,      ALIAS=CVN2,    FORMAT=F6.2, $
   FIELD=C.V.N.3,      ALIAS=CVN3,    FORMAT=F6.2, $
   FIELD=C.V.N.4,      ALIAS=CVN4,    FORMAT=F6.2, $
  SEGNAME=NDE_PROP, PARENT=ALLOY_ID, SEGTYPE=S,
    LOCATION=NDEFILE, $
   FIELD=ELECTRIC_RES, ALIAS=ER,      FORMAT=D14.7, $
   FIELD=SLOPE,        ,              FORMAT=F4.2, $
   FIELD=ER_VAR,       ,              FORMAT=F4.1, $
   FIELD=CURIE_TEMP,   ALIAS=CT,      FORMAT=F5.1, $
   FIELD=CRITICAL_FS,,                FORMAT=F9.4C,$
   FIELD=NDE_REF1,     ,              FORMAT=A60, $
   FIELD=NDE_REF2,     ,              FORMAT=A60, $
  SEGNAME=MAGNET, PARENT=NDE_PROP, SEGTYPE=S1, $
   FIELD=MAG_PERM,     ALIAS=PERM,    FORMAT=D11.4, $
   FIELD=FIEL_STR,     ALIAS=FS,      FORMAT=D11.4, $
  SEGNAME=CONDUCT, PARENT=NDE_PROP, SEGTYPE=S1, $
   FIELD=NDE_TEMP,     ,              FORMAT=F5.1, $
   FIELD=EXPAN_COEFF,,                FORMAT=F9.5C, $
   FIELD=CONDUCTIV,    ,              FORMAT=F9.5C, $
END
    DBA=PROG1,$
 USER=OLEV,ACCESS=RW,$
 USER=ANDY,ACCESS=RW,$
```

METAL PROPERTIES DATA BASE APLLICATION ROUTINES

Presented below is a listing of the routines for the metal properties data base. It is important to note that when viewing hard copies of the routines, some of the special characters which are supported in the focus draw mode are not recognized on the printer. This is the reason why there are unexplained character borders around the input areas on the hardcopy listings. These are actually screen borders on the CRT output.

	ROUTINE NAME	PAGE NUMBER
	METMENU.FEX	49
	ALTPROF.FEX	51
	MCONTROL.FEX	53
	DELMET.FEX	56
	MDINPUT.FEX	65
	MBROWSE.FEX	78
	MBACKUP.FEX	87
	MRECOVER.FEX	88
	METTAB.FEX	89
	STREN.FEX	91
	LEFM.FEX	95
	EPFM.FEX	99
	FATIGUE.FEX	105
	STRESS.FEX	110
	TOUGH.FEX	115
	NDEPROP.FEX	119
	METMOVE.FEX	123
TEXT FILE -	MOVINSTR.DAT	125

```
-*******************************************************************
-*                                                                      *
-*                              METMENU.FEX                             *
-*                                                                      *
-************************************************************************
-*  THIS IS THE PRIMARY MENU CONTROLLING ALL ASPECTS OF THE METALS      *
-*   DATABASE. THE ROUTINE SHOULD BE RUN EVERYTIME FOCUS IS ENTERED FOR *
-*   THE METALS DATABASE, BY INCLUDING THE LINE 'EX METMENU' AS ONE OF  *
-*   THE LAST LINES OF THE FOCEXEC 'PROFILE'.                           *
-************************************************************************
-*                                                                      *
-*                   PROGRAM UPDATED BY JAMES LIZOTTE                   *
-*                              MAY 1986                                *
-                                                                       *
-************************************************************************
-MAINMENU
-SET &MSG = '                                        ';
-SET &OPT = ' ';
-SET &&NAME = '                        ';
-SET &&ID = '          ';
-CRTFORM
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-" :                       METAL PROPERTIES DATABASE                     : "
-" : DATE: <D.&DATE        MAIN SELECTION MENU           TIME: <D.&TOD :"
-" LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
-" :           OPTION            FUNCTION                               :"
-" :           DDDDDD           DDDDDDDDDDD                             :"
-" :             1         INPUT NEW RECORDS                            :"
-" :             2         BROWSE DATABASE                              :"
-" :             3         CHANGE/UPDATE RECORDS                        :"
-" :             4         DELETE SEGMENTS/ENTIRE RECORDS               :"
-" :             5         CREATE A BACKUP DISKETTE OF DATABASE         :"
-" :             6         RECOVERY OF DATABASE VIA BACKUP DISKETTE     :"
-" :             7         PREPARING A REPORT (SIMPLE REPORTS)          :"
-" :             8         PREPARING DETAILED REPORTS                   :"
-" :             9         MOVING THE METALS DATABASE,APPLICATIONS      :"
-" :             X         EXIT                                         :"
-" :                                                                    :"
-" :      SELECT OPTION ===><&OPT         THEN PRESS 'ENTER'             :"
-" :                                                                    :"
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-"  <D.&MSG "
-SET &FUNC = DECODE &OPT ( 1 'EX MDINPUT'
-                         2 'EX MBROWSE'
-                         3 'EX MCONTROL'
-                         4 'EX DELMET'
-                         5 'EX MBACKUP'
-                         6 'EX MRECOVER'
-                         7 'EX METTAB'
-                         8 'TABLETALK'
-                         9 'EX METMOVE'
-                         X 'EXIT'
-                         ELSE 'MAINMENU');
```

```
-SET &MSG = IF &FUNC EQ 'MAINMENU' THEN '** INVALID OPTION -REENTER **'
-                                  ELSE &FUNC;
-IF &FUNC EQ 'EXIT' OR 'MAINMENU' THEN GOTO &FUNC;
&FUNC
-RUN
-GOTO MAINMENU
-EXIT
```

```
***************************************************************************
*                                                                         *
*                              PROFILE.FEX                                *
*                       ( STORED AS ALTPROF.FEX )                         *
*          (USED AS PROFILE WHEN SETTING UP METAL PROPERTIES DATA BASE    *
*           AS A MINI SYSTEM.)                                            *
***************************************************************************
*                                                                         *
*   THIS PROGRAM IS EXECUTED UPON ENTRY INTO FOCUS AND SETS THE INITIAL   *
*      PARAMETERS IN THE PROGRAM AS WELL AS ACTIVATING THE USERS PASSWORD!*
*                                                                         *
***************************************************************************
*                                                                         *
*                     PROGRAM WRITTEN BY JAMES LIZOTTE                    *
*                               JUNE 1986                                 *
*                                                                         *
***************************************************************************
SET MSG=OFF
-SET &FUNC='         ';
-SET &CHOICE=' ';
-SET &PASS='        ';
-CRTFORM
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-" :                                                                  :"
-" :                           WELCOME TO FOCUS                       :"
-" :                           MMMMMMMMMMMMMMMM                       :"
-" :                                                                  :"
-" :           FOR SECURITY REASONS , YOU ARE KINDLY REQUESTED TO    :"
-" :         ENTER YOUR PASSWORD IN THE SPACE PROVIDED BELOW.        :"
-" :                                                                  :"
-" :                                          —— THANK YOU ——         :"
-" :                                                                  :"
-" :                 PASSWORD:<&PASS                               :"
-" :                                                                  :"
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
SET PASS=&PASS
-START2
-CRTFORM LINE 1
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-" :                                                                  :"
-" :                          MAKE YOUR SELECTION                     :"
-" :                          MMMMMMMMMMMMMMMMMMM                     :"
-" :                                                                  :"
-" :       ENTER - M - TO VIEW THE METALS DATABASE MENU               :"
-" :       ENTER - X - TO EXIT TO DOS                                 :"
-" :                                                                  :"
-" :                                IMMM;                             :"
-" :                  SELECTION:  :<&CHOICE <38 :    <74 :"
-" :                                HMMM<                             :"
-" :                                                                  :"
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-SET &FUNC = DECODE &CHOICE (M 'EX METMENU'
-                            X 'FIN'
-                            ELSE 'EX PROFILE');
&FUNC
-RUN
-GOTO START2
```

```
-EXIT
```

```
-*************************************************************************
-*                                                                       *
-*                          MCONTROL.FEX                                 *
-*                                                                       *
-*************************************************************************
-* THIS ROUTINE DRIVES THE CHANGE/UPDATE PROCEDURE FOR THE METALS FILE *
-*  ON MATCHING THE ALLOY'S NAME AND ID, THE ROUTINE BRANCHES TO THE    *
-*  ROUTINE CHOSEN BY THE USER TO ENTER APPROPRIATE RECORD SEGMENT      *
-*************************************************************************
-*        THIS SEGMENT WAS UPDATED AND REVISED BY JAMES LIZOTTE         *
-*                           MAY 1986                                    *
-*************************************************************************
MODIFY FILE METALS
-START
-SET MSG=OFF;
-SET &&NAME = '                         ';
-SET &&ID = '          ';
-SET &MSG ='                                         ';
-CRTFORM
-" "
-" "
-"            IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-"            :                                               :"
-"            :      WELCOME TO THE METAL PROPERTIES DATABASE :"
-"            :              UPDATE CONTROL PROGRAM           :"
-"            LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
-"            :                                               :"
-"            :      PLEASE ENTER ALLOY'S NAME AND ASTM ID    :"
-"            :                                               :"
-"            :  (THESE KEYS ARE REQUIRED TO IDENTIFY THE DATA :"
-"            :     THAT YOU WISH TO UPDATE.)                 :"
-"            :                                               :"
-"            :   TAB KEY MOVES THE CURSOR FROM FIELD TO FIELD :"
-"            :  (TYPE 'END' AND HIT ENTER TO END THIS ROUTINE) :"
-"            HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-" "
-"                           NAME :  <T.&&NAME> "
-"                             ID :  <T.&&ID> "
  COMPUTE
  NAME = '&&NAME';
  ID = '&&ID';
  ACTION/A1=' ';
  REPLY/A1=;
  MATCH NAME
    ON MATCH GOTO CHOICE
    ON NOMATCH CRTFORM
    "   IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
    "   :           ALLOY   < D.NAME                       :"
    "   :              - WAS NOT FOUND IN THE DATABASE!                   :"
    "   :                                                                 :"
    "   : IF ALLOY WAS ENTERED INCORRECTLY. PLEASE  RE-ATTEMPT BY RETURNING :"
    "   :  TO MAIN MENU ON NEXT SCREEN AND CHOOSING OPTION 3 ONCE AGAIN    :"
    "   :                                                                 :"
    "   : IF A NEW ALLOY IS REQUIRED RETURN TO MAIN MENU ON NEXT SCREEN AND :"
    "   :  ONCE IN MAIN MENU CHOOSE OPTION 1 AND ENTER NEW ALLOY           :"
    "   :                                                                 :"
    "   :                   ENTER C  TO CONTINUE <REPLY   <72 :"
    "   :                                                                 :"
    "   HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    GOTO EXIT
  ***************************************************************************
  *  THE ABOVE BRANCH CAUSES AN EXIT FROM THIS ROUTINE WITH CONTROL BEING   *
  *     PASSED BACK TO THE MAINMENU PROGRAM - METMENU!                      *
  ***************************************************************************
   CASE CHOICE
    CRTFORM LINE 1
   "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   ":          RECORD FOR ALLOY NAME: <D.ALLOY             :"
   ":                    ALLOY ID: <D.ID                         :"
   ":                                                                       :"
   ":          WAS FOUND AND IS READY FOR UPDATE:                           :"
   ":       ( MAKE CHANGES TO ANY FIELD THAT REQUIRES CHANGES)              :"
   ":       ( USE TAB KEY TO MOVE AROUND FIELDS- PRESS ENTER WHEN COMPLETED) :"
   ":                                                                       :"
   ":      COMPOSITION:                                                     :"
   ": <2  <T.COMPO "
   ":                                                                       :"
   ":      DATE: <T.DATE                                                   :"
   ":                                                                       :"
   ":      REMARKS:                                                         :"
   ":<T.REMARKS1          :"
   ":<T.REMARKS2          :"
   ":                                                                       :"
   "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   MATCH NAME ID
   ON MATCH UPDATE COMPO DATE REMARKS1 REMARKS2
GOTO EXIT
 ENDCASE
 DATA VIA FIDEL
 END
-RUN
-CHOICE2
-SET &OPT =' ';
-CRTFORM
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-" :             CHOOSE AN OPTION TO UPDATE/CHANGE OR ADD SEGMENTS        :"
-" :                                                                    :"
-" :            OPTION      TYPE                                          :"
-" :            ------      ----                                          :"
-" :              A         STRENGTH PROPERTIES                           :"
-" :              B         LEFM PROPERTIES : K1C AND K1A TABLES          :"
-" :              C         EPFM PROPERTIES : J1C TABLES                  :"
-" :                             J VS DELTA A TABLES                      :"
-" :                             AND LOAD VS DISP TABLES                  :"
-" :              D         FATIGUE PROPERTIES : DA/DN VS DELTA K TABLES  :"
-" :                                A VS N TABLES                         :"
-" :              E         STRESS CORROSION PROPERTIES                   :"
-" :              F         TOUGHNESS PROPERTIES (CHARPY VALUES)          :"
-" :              G         THERMAL ELECTRICAL AND MAGNETIC PROPERTIES    :"
-" :              X         TO EXIT (TO METALS MENU)                      :"
-" :                                                                    :"
-" :        SELECT OPTION ==><&OPT          THEN PRESS ENTER             :"
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-"                    <D.&MSG"
*****************************************************************
*     THE OPTION CHOSEN IS DECODED TO ENABLE EXECUTION.         *
```

```
**********************************************************************
-SET &FUNC = DECODE &OPT (A 'EX STREN'
-                         B 'EX LEFM'
-                         C 'EX EPFM'
-                         D 'EX FATIGUE'
-                         E 'EX STRESS'
-                         F 'EX TOUGH'
-                         G 'EX NDEPROP'
-                         X 'EXIT'
-                         ELSE 'CHOICE2');
-SET &MSG = IF &FUNC EQ 'CHOICE2' THEN 'INVALID OPTION - PLEASE RE-ENTER'
-           ELSE '           ';
-IF &FUNC EQ 'EXIT' OR 'CHOICE2' THEN GOTO &FUNC;
&FUNC
-RUN
-GOTO CHOICE2
  CASE CHOICE
   CRTFORM LINE 1
-EXIT
```

```
*******************************************************************************
*                                                                             *
*                                DELMET.FEX                                   *
*                                                                             *
*******************************************************************************
*                                                                             *
*   THIS PROGRAM ALLOWS FOR THE DELETION OF WHOLE OR PARTIAL RECORDS IN THE   *
*     DATABASE. THE RECORD IS MATCHED ON THE ALLOYNAME AND THEN THE USER IS   *
*     PROMPTED WITH THE OPTIONS AVAILABLE.                                    *
*******************************************************************************
*                                                                             *
*                       PROGRAM WRITTEN BY JAMES LIZOTTE                      *
*                                 MAY 1986                                    *
*                                                                             *
*******************************************************************************
MODIFY FILE METALS
 COMPUTE
    ACTION/A1=' ';
    CHOICE/A1=' ';
  CRTFORM LINE 1
   "</5"
   "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   ":                                                                      :"
   ":               WELCOME TO THE DELETION CONTROL PROGRAM                :"
   ":                THIS PROGRAM WILL ALLOW YOU TO DELETE  WHOLE OR PART  :"
   ":                RECORDS. - PRESS ENTER TO CONTINUE!                   :"
   ":                                                                      :"
   "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    GOTO INNAME
 ******************************************************************************
 *       THE ALLOY NAME IS ENTERED HERE!                                      *
 ******************************************************************************
 CASE INNAME
   CRTFORM LINE 1
  " IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  " :                                                                    :"
  " :       PLEASE ENTER THE REFERENCE TO THE ALLOY TO BE OPERATED ON:   :"
  " :            (ENTER  'END'  IN EITHER FIELD TO EXIT ROUTINE)         :"
  " :                                                                    :"
  " :       ALLOY NAME:<NAME                          :"
  " :       ASTM ID:<ID                                         :"
  " :                                                                    :"
  " HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    MATCH NAME ID
      ON NOMATCH TYPE "ALLOY NOT FOUND PLEASE RE-ENTER"
      ON NOMATCH GOTO INNAME
      ON MATCH CRTFORM LINE 1
     "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
     ":               CHOOSE THE DELETION OPTION DESIRED              :"
     "LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
     ":                                                               :"
     ":    OPTION    ACTION                                           :"
     ":  DDDDDDDDD  DDDDDDDDD                                         :"
     ":      A        DELETE THE ENTIRE RECORD                        :"
     ":      B        DELETE STRENGTH PROPERTIES AND RELATED TABLES   :"
     ":      C        DELETE LEFM PROPERTIES AND RELATED TABLES       :"
     ":      D        DELETE EPFM PROPERTIES AND RELATED TABLES       :"
     ":      E        DELETE FATIGUE PROPERTIES AND RELATED TABLES    :"
    ":       F       DELETE STRESS CORROSION PROPERTIES AND TABLES       :"
    ":       G       DELETE TOUGHNESS (CHARPY) PROPERTIES AND TABLES     :"
    ":       H       DELETE THERMAL,ELECTRICAL AND MAGNETIC PROPERTIES   :"
    ":                      AND RELATED TABLES                           :"
    ":       X       EXIT TO MAINMENU                                    :"
    ":                      OPTION: <ACTION                                  :"
    "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
     IF ACTION EQ 'X' THEN GOTO EXIT;
     IF ACTION EQ 'A' THEN GOTO DWHOLE;
     IF ACTION EQ 'B' THEN GOTO DSTREN;
     IF ACTION EQ 'C' THEN GOTO DLEFM;
     IF ACTION EQ 'D' THEN GOTO DEPFM;
     IF ACTION EQ 'E' THEN GOTO DFAT;
     IF ACTION EQ 'F' THEN GOTO DSTRESS;
     IF ACTION EQ 'G' THEN GOTO DTOUGH;
     IF ACTION EQ 'H' THEN GOTO DELEC
                      ELSE GOTO TOP;
   ENDCASE
  **************************************************************************
  *   THIS CASE DELETES THE ENTIRE RECORD ASSOCIATED WITH THE ALLOY NAME. *
  **************************************************************************
  CASE DWHOLE
   COMPUTE
      NAME=NAME;
      ID=ID;
   MATCH NAME ID
    ON NOMATCH TYPE "ERROR IN THE NAME OR ID FIELD PLEASE RE-ENTER"
    ON NOMATCH GOTO TOP
    ON MATCH CRTFORM LINE 1
    "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
    ":                                                                  :"
    ":        ATTENTION THIS IS THE REAL THING IF YOU ENTER A 'D'       :"
    ":         IN THE BOX BELOW THE RECORD ASSOCIATED WITH:             :"
    ":         ALLOY: <D.NAME                     :"
    ":         ASTM ID: <D.ID                                  :"
    ":         WILL BE DELETED !                                        :"
    ":                                                                  :"
    ":        SO TAKE HEED AND ENTER THE DESIRED CHOICE:                :"
    ":                                                                  :"
    ":         ENTER -D - TO DELETE THE ENTIRE RECORD                   :"
    ":         ENTER -X - TO EXIT ROUTINE                               :"
    ":         ENTER -S - TO RESTART                                    :"
    ":                              CHOICE:<CHOICE                          :"
    "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    IF CHOICE EQ 'X' THEN GOTO EXIT;
    IF CHOICE EQ 'S' THEN GOTO TOP;
    IF CHOICE NE 'D' THEN GOTO DWHOLE;
    MATCH NAME ID
     ON MATCH DELETE
    GOTO INNAME
    ENDCASE
****************************************************************************
* THIS CASE DELETES THE STRENGTH PROPERTIES AND RELATED TABLES ASSOCIATED *
*  WITH THE USER PROVIDED STRENGTH TEMPERATURE.                            *
****************************************************************************
CASE DSTREN
 CRTFORM LINE 1
 " IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
" :                                                                   :"
" :    PLEASE ENTER THE TABLE NUMBER OF THE STRENGTH TABLE ASSOCIATED  :"
" :      WITH  ALLOY NAME:<D.NAME                          :"
" :       ASTM ID:<D.ID                                          :"
" :    THIS TABLE NUMBER WILL BE DELETED!                             :"
" :    TABLE NUMBER:<TABLE_NO                                           :"
" :                                                                   :"
" :   (ESCAPE=><ACTION ENTER 'E' TO EXIT RESTART ROUTINE)      <71 :"
" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF ACTION EQ 'E' THEN GOTO TOP;
  MATCH NAME ID
   ON NOMATCH TYPE "ERROR IN THE NAME OR ID FIELD PLEASE RE-ENTER"
   ON NOMATCH GOTO TOP
   GOTO DSTREN1
  ENDCASE
***************************************************************************
*       PROMPT USER FOR FINAL VERIFICATION OF DELETION!                  *
***************************************************************************
  CASE DSTREN1
  COMPUTE
    TABLE_NO=TABLE_NO;
   MATCH TABLE_NO
   ON NOMATCH TYPE " TABLE NOT FOUND PLEASE RE-ENTER TABLE NUMBER!"
   ON NOMATCH GOTO DSTREN
   ON MATCH CRTFORM LINE 1
   "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   ":                                                                :"
   ":        ATTENTION THIS IS THE REAL THING IF YOU ENTER A 'D'     :"
   ":    IN THE BOX BELOW THE STRENGTH PROPERTIES ASSOCIATED WITH:   :"
   ":         ALLOY: <D.NAME                    :"
   ":         ASTM ID: <D.ID                                :"
   ":         TABLE NUMBER:<D.TABLE_NO                                  :"
   ":         WILL BE DELETED!                                       :"
   ":                                                                :"
   ":        SO TAKE HEED AND ENTER THE DESIRED CHOICE:              :"
   ":                                                                :"
   ":         ENTER -D - TO DELETE THE STRENGTH PROPERTIES           :"
   ":         ENTER -X - TO EXIT ROUTINE                             :"
   ":         ENTER -S - TO RESTART                                  :"
   ":                             CHOICE:<CHOICE                       :"
   "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   IF CHOICE EQ 'X' THEN GOTO EXIT;
   IF CHOICE EQ 'S' THEN GOTO TOP;
   IF CHOICE NE 'D' THEN GOTO DSTREN1;
   MATCH TABLE_NO
    ON MATCH DELETE
   GOTO INNAME
   ENDCASE
  **************************************************************************
  * THIS CASE DELETES THE LEFM PROPERTIES AND RELATED TABLES ASSOCIATED *
  *  WITH YIELD STRESS WHICH THE USER PROVIDES.                          *
  **************************************************************************
  CASE DLEFM
 CRTFORM LINE 1
" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
" :                                                                   :"
" :    PLEASE ENTER THE YIELD STRESS OF THE LEFM PROPERTIES ASSOCIATED  :"
" :      WITH  ALLOY NAME:<D.NAME                          :"
" :       ASTM ID:<D.ID                                              :"
" :     THE RELATED SEGMENT WILL BE DELETED!                               :"
" :        YIELD STRESS:<LESTRESS                                          :"
" :                                                                        :"
" :   (ESCAPE=><ACTION ENTER 'E' TO EXIT RESTART ROUTINE)     <73 :"
" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF ACTION EQ 'E' THEN GOTO TOP;
  MATCH NAME ID
   ON NOMATCH TYPE "ERROR IN THE NAME OR ID FIELD PLEASE RE-ENTER"
   ON NOMATCH GOTO TOP
   GOTO DLEFM1
  ENDCASE
***************************************************************************
*    PROMPT THE USER FOR FINAL VERIFICATION OF DELETION!                  *
***************************************************************************
 CASE DLEFM1
   COMPUTE
    LESTRESS=LESTRESS;
   MATCH LESTRESS
   ON NOMATCH TYPE " YIELD STRESS NOT FOUND PLEASE RE-ENTER"
   ON NOMATCH GOTO DLEFM
   ON MATCH CRTFORM LINE 1
   "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   ":                                                              :"
   ":       ATTENTION THIS IS THE REAL THING IF YOU ENTER A 'D'    :"
   ":    IN THE BOX BELOW THE LEFM PROPERTIES ASSOCIATED WITH:     :"
   ":        ALLOY: <D.NAME                    :"
   ":        ASTM ID: <D.ID                                :"
   ":        YIELD STRESS:<D.LESTRESS                                   :"
   ":        WILL BE DELETED!                                      :"
   ":                                                              :"
   ":       SO TAKE HEED AND ENTER THE DESIRED CHOICE:             :"
   ":                                                              :"
   ":        ENTER -D - TO DELETE THE LEFM PROPERTIES              :"
   ":        ENTER -X - TO EXIT ROUTINE                            :"
   ":        ENTER -S - TO RESTART                                 :"
   ":                         CHOICE:<CHOICE                            :"
   "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   IF CHOICE EQ 'X' THEN GOTO EXIT;
   IF CHOICE EQ 'S' THEN GOTO TOP;
   IF CHOICE NE 'D' THEN GOTO DLEFM1;
   MATCH LESTRESS
    ON MATCH DELETE
   GOTO INNAME
   ENDCASE
****************************************************************************
*    THIS CASE DELETES THE EPFM PROPERTIES AND RELATED TABLES ASSOCIATED  *
*       WITH THE YIELD STRESS WHICH THE USER SUPPLIES.                     *
****************************************************************************
   CASE DEPFM
  CRTFORM LINE 1
" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
" :                                                                     :"
" :     PLEASE ENTER THE YIELD STRESS OF THE EPFM PROPERTIES ASSOCIATED   :"
" :       WITH  ALLOY NAME:<D.NAME                   :"
" :        ASTM ID:<D.ID                                          :"
" :     THE RELATED SEGMENT WILL BE DELETED!                               :"
" :     YIELD STRESS:<EPSTRESS                                              :"
" :                                                                     :"
" :   (ESCAPE=><ACTION ENTER 'E' TO EXIT RESTART ROUTINE)      <73 :"
" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF ACTION EQ 'E' THEN GOTO TOP;
  MATCH NAME ID
   ON NOMATCH TYPE "ERROR IN THE NAME OR ID FIELD PLEASE RE-ENTER"
   ON NOMATCH GOTO TOP
   GOTO DEPFM1
  ENDCASE
 ***************************************************************************
 *    PROMPT THE USER FOR FINAL VERIFICATION OF DELETION!                  *
 ***************************************************************************
  CASE DEPFM1
   COMPUTE
     EPSTRESS=EPSTRESS;
   MATCH EPSTRESS
   ON NOMATCH TYPE " YIELD STRESS NOT FOUND PLEASE RE-ENTER"
   ON NOMATCH GOTO DEPFM
   ON MATCH CRTFORM LINE 1
   "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   ":                                                              :"
   ":        ATTENTION THIS IS THE REAL THING IF YOU ENTER A 'D'     :"
   ":    IN THE BOX BELOW THE EPFM PROPERTIES ASSOCIATED WITH:        :"
   ":         ALLOY: <D.NAME                    :"
   ":         ASTM ID: <D.ID                                 :"
   ":         YIELD STRESS:<D.EPSTRESS                                    :"
   ":         WILL BE DELETED!                                        :"
   ":                                                                 :"
   ":        SO TAKE HEED AND ENTER THE DESIRED CHOICE:               :"
   ":                                                                 :"
   ":         ENTER -D - TO DELETE THE EPFM PROPERTIES                :"
   ":         ENTER -X - TO EXIT ROUTINE                              :"
   ":         ENTER -S - TO RESTART                                   :"
   ":                              CHOICE:<CHOICE                         :"
   "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   IF CHOICE EQ 'X' THEN GOTO EXIT;
   IF CHOICE EQ 'S' THEN GOTO TOP;
   IF CHOICE NE 'D' THEN GOTO DEPFM1;
   MATCH EPSTRESS
    ON MATCH DELETE
   GOTO INNAME
   ENDCASE
*******************************************************************************
*    THIS CASE DELETES THE FATIGUE PROPERTIES AND RELATED TABLES ASSOCIATED *
*     WITH THE FATIGUE TEMPERATURE WHICH THE USER SUPPLIES.                    *
*******************************************************************************
CASE DFAT
  CRTFORM LINE 1
 " IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 " :                                                                    :"
 " :  PLEASE ENTER THE FATIGUE TEMP OF THE FATIGUE PROPERTIES ASSOCIATED  :"
 " :       WITH  ALLOY NAME:<D.NAME                        :"
 " :         ASTM ID:<D.ID                                         :"
 " :     THE RELATED SEGMENT WILL BE DELETED!                             :"
 " :     FATIGUE TEMPERATURE:<FTEMP                                     :"
 " :                                                                    :"
 " :   (ESCAPE=><ACTION ENTER 'E' TO EXIT RESTART ROUTINE)      <73 :"
 " HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
```

```
  IF ACTION EQ 'E' THEN GOTO TOP;
   MATCH NAME ID
    ON NOMATCH TYPE "ERROR IN THE NAME OR ID FIELD PLEASE RE-ENTER"
    ON NOMATCH GOTO TOP
     GOTO DFAT1
    ENDCASE
  ****************************************************************************
  *    PROMPT THE USER FOR FINAL VERIFICATION OF DELETION!                    *
  ****************************************************************************
    CASE DFAT1
     COMPUTE
     FTEMP=FTEMP;
    MATCH FTEMP
    ON NOMATCH TYPE " FATIGUE TEMP NOT FOUND PLEASE RE-ENTER"
    ON NOMATCH GOTO DFAT
    ON MATCH CRTFORM LINE 1
    "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
    ":                                                                 :"
    ":       ATTENTION THIS IS THE REAL THING IF YOU ENTER A 'D'       :"
    ":   IN THE BOX BELOW THE FATIGUE PROPERTIES ASSOCIATED WITH:       :"
    ":        ALLOY: <D.NAME                        :"
    ":        ASTM ID: <D.ID                                   :"
    ":        FATIGUE TEMPERATURE:<D.FTEMP                             :"
    ":        WILL BE DELETED!                                        :"
    ":                                                                :"
    ":       SO TAKE HEED AND ENTER THE DESIRED CHOICE:               :"
    ":                                                                :"
    ":        ENTER -D - TO DELETE THE FATIGUE PROPERTIES             :"
    ":        ENTER -X - TO EXIT ROUTINE                              :"
    ":        ENTER -S - TO RESTART                                   :"
    ":                           CHOICE:<CHOICE                           :"
    "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    IF CHOICE EQ 'X' THEN GOTO EXIT;
    IF CHOICE EQ 'S' THEN GOTO TOP;
    IF CHOICE NE 'D' THEN GOTO DFAT1;
    MATCH FTEMP
     ON MATCH DELETE
    GOTO INNAME
    ENDCASE
********************************************************************************
* THIS CASE DELETES THE STRESS CORROSION PROPERTIES AND RELATED TABLES         *
*  ASSOCIATED WITH THE STRESS TEMPERATURE WHICH THE USER SUPPLIES.             *
********************************************************************************
CASE DSTRESS
  CRTFORM LINE 1
 " IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 " :                                                                       :"
 " :  PLEASE ENTER THE STRESS TEMP OF THE STRESS CORROSION PROPERTIES     :"
 " :   ASSOCIATED WITH  ALLOY NAME:<D.NAME               :"
 " :       ASTM ID:<D.ID                                          :"
 " :  THE RELATED SEGMENT WILL BE DELETED!                                :"
 " :   STRESS TEMPERATURE:<SCC_TEMP                                        :"
 " :                                                                      :"
 " :   (ESCAPE=><ACTION ENTER 'E' TO EXIT RESTART ROUTINE)     <73 :"
 " HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  IF ACTION EQ 'E' THEN GOTO TOP;
   MATCH NAME ID
    ON NOMATCH TYPE "ERROR IN THE NAME OR ID FIELD PLEASE RE-ENTER"
    ON NOMATCH GOTO TOP
    GOTO DSTRESS1
   ENDCASE
  ***************************************************************************
  *    PROMPT THE USER FOR FINAL VERIFICATION OF DELETION!                  *
  ***************************************************************************
   CASE DSTRESS1
   COMPUTE
     SCC_TEMP=SCC_TEMP;
    MATCH SCC_TEMP
    ON NOMATCH TYPE " STRESS TEMP NOT FOUND PLEASE RE-ENTER"
    ON NOMATCH GOTO DSTRESS
    ON MATCH CRTFORM LINE 1
    "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
    ":                                                              :"
    ":        ATTENTION THIS IS THE REAL THING IF YOU ENTER A 'D'   :"
    ":    IN THE BOX BELOW THE STRESS CORROSION PROPERTIES ASSOCIATED  :"
    ":    WITH ALLOY: <D.NAME                        :"
    ":         ASTM ID: <D.ID                                  :"
    ":         STRESS TEMPERATURE:<D.SCC_TEMP                                 :"
    ":         WILL BE DELETED!                                     :"
    ":                                                              :"
    ":        SO TAKE HEED AND ENTER THE DESIRED CHOICE:            :"
    ":                                                              :"
    ":         ENTER -D - TO DELETE THE FATIGUE PROPERTIES          :"
    ":         ENTER -X - TO EXIT ROUTINE                           :"
    ":         ENTER -S - TO RESTART                                :"
    ":                             CHOICE:<CHOICE                             :"
    "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    IF CHOICE EQ 'X' THEN GOTO EXIT;
    IF CHOICE EQ 'S' THEN GOTO TOP;
    IF CHOICE NE 'D' THEN GOTO DSTRESS1;
    MATCH SCC_TEMP
     ON MATCH DELETE
    GOTO INNAME
    ENDCASE
****************************************************************************
* THIS CASE DELETES THE TOUGHNESS (CHARPY) PROPERTIES AND RELATED TABLES   *
*  ASSOCIATED WITH THE YIELD STRESS AND IRRADIATION MANTISSA WHICH THE     *
*  USER SUPPLIES.                                                          *
****************************************************************************
CASE DTOUGH
  CRTFORM LINE 1
 " IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 " :                                                                  :"
 " :  PLEASE ENTER THE YIELD STRESS AND IRRADIATION MANTISSA OF THE    :"
 " :  TOUGHNESS PROPERTIES ASSOCIATED WITH:                            :"
 " :     ALLOY NAME:<D.NAME                          :"
 " :        ASTM ID:<D.ID                                        :"
 " :  THE RELATED SEGMENT WILL BE DELETED!                             :"
 " : YIELD STRESS:<TYS                                              :"
 " : IRRADIATION MANTISSA:<MANTISSA                                       :"
 " :                                                                  :"
 " :   (ESCAPE=><ACTION ENTER 'E' TO EXIT RESTART ROUTINE)     <72 :"
 " HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  IF ACTION EQ 'E' THEN GOTO TOP;
   MATCH NAME ID
    ON NOMATCH TYPE "ERROR IN THE NAME OR ID FIELD PLEASE RE-ENTER"
    ON NOMATCH GOTO TOP
     GOTO DTOUGH1
     ENDCASE
  *************************************************************************
  *    PROMPT THE USER FOR FINAL VERIFICATION OF DELETION!                *
  *************************************************************************
   CASE DTOUGH1 =
   COMPUTE
     TYS=TYS;
     MANTISSA=MANTISSA;
    MATCH TYS MANTISSA
    ON NOMATCH TYPE " YIELD STRESS OR MANTISSA NOT FOUND -  PLEASE RE-ENTER"
    ON NOMATCH GOTO DTOUGH
    ON MATCH CRTFORM LINE 1
    "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
    ":                                                               :"
    ":       ATTENTION THIS IS THE REAL THING IF YOU ENTER A 'D'     :"
    ":    IN THE BOX BELOW THE TOUGHNESS PROPERTIES ASSOCIATED       :"
    ":   WITH ALLOY: <D.NAME                     :"
    ":        ASTM ID: <D.ID                                     :"
    ":        YIELD STRESS:<D.TYS                                     :"
    ":   IRRADIATION MANTISSA:<D.MANTISSA                                   :"
    ":        WILL BE DELETED!                                   .    :"
    ":                                                                :"
    ":       SO TAKE HEED AND ENTER THE DESIRED CHOICE:               :"
    ":                                                                :"
    ":        ENTER -D - TO DELETE THE TOUGHNESS PROPERTIES           :"
    ":        ENTER -X - TO EXIT ROUTINE                              :"
    ":        ENTER -S - TO RESTART                                   :"
    ":                           CHOICE:<CHOICE                          :"
    "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    IF CHOICE EQ 'X' THEN GOTO EXIT;
    IF CHOICE EQ 'S' THEN GOTO TOP;
    IF CHOICE NE 'D' THEN GOTO DTOUGH1;
    MATCH TYS MANTISSA
     ON MATCH DELETE
    GOTO INNAME
    ENDCASE
*****************************************************************************
* THIS CASE DELETES THE THERMAL,ELECTRICAL AND MAGNETIC PROPERTIES          *
*  AND THE TABLES ASSOCIATED WITH THESE PROPERTIES BY MATCHING THE          *
*  RESISTIVITY WHICH THE USER SUPPLIES.                                     *
*****************************************************************************
CASE DELEC
  CRTFORM LINE 1
 " IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 " :                                                                      :"
 " :  PLEASE ENTER THE ELECTRICAL RESISTIVITY OF THE E.T.M PROPERTIES     :"
 " :   ASSOCIATED WITH:                                                   :"
 " :    ALLOY NAME:<D.NAME                                  :"
 " :       ASTM ID:<D.ID                                              :"
 " :    THE RELATED SEGMENT WILL BE DELETED!                              :"
 " :    ELECTRICAL RESISTIVITY:                                           :"
 " :        <ER                                               :"
 " :                                                                      :"
 " :   (ESCAPE=><ACTION ENTER 'E' TO EXIT RESTART ROUTINE)     <73 :"
 " HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  IF ACTION EQ 'E' THEN GOTO TOP;
```

```
MATCH NAME ID
 ON NOMATCH TYPE "ERROR IN THE NAME OR ID FIELD PLEASE RE-ENTER"
 ON NOMATCH GOTO TOP
   GOTO DELEC1
ENDCASE
********************************************************************************
*    PROMPT THE USER FOR FINAL VERIFICATION OF DELETION!                       *
********************************************************************************
CASE DELEC1
COMPUTE
  ER=ER;
 MATCH ER
 ON NOMATCH TYPE " ELECTRICAL RESISTIVITY NOT FOUND -  PLEASE RE-ENTER"
 ON NOMATCH GOTO DELEC
 ON MATCH CRTFORM LINE 1
 "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 ":                                                                  :"
 ":        ATTENTION THIS IS THE REAL THING IF YOU ENTER A 'D'       :"
 ":    IN THE BOX BELOW THE E.T.M PROPERTIES ASSOCIATED WITH:        :"
 ":         ALLOY: <D.NAME                        :"
 ":         ASTM ID: <D.ID                                   :"
 ":        ELEC RES:<D.ER                               :"
 ":         WILL BE DELETED!                                         :"
 ":                                                                  :"
 ":        SO TAKE HEED AND ENTER THE DESIRED CHOICE:                :"
 ":                                                                  :"
 ":         ENTER -D - TO DELETE THE E.T.S PROPERTIES                :"
 ":         ENTER -X - TO EXIT ROUTINE                               :"
 ":         ENTER -S - TO RESTART                                    :"
 ":                            CHOICE:<CHOICE                           :"
 "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF CHOICE EQ 'X' THEN GOTO EXIT;
 IF CHOICE EQ 'S' THEN GOTO TOP;
 IF CHOICE NE 'D' THEN GOTO DELEC1;
 MATCH ER
  ON MATCH DELETE
 GOTO INNAME
 ENDCASE
 DATA VIA FIDEL
 END
```

```
**********************************************************************
*                                                                    *
*                          MDINPUT.FEX                               *
*                                                                    *
**********************************************************************
*                                                                    *
*  THIS ROUTINE INPUTS DATA INTO THE METALS DATA BASE. THE ROUTINE   *
*   CHECKS ALL FIELDS FOR APPROPRIATE ALPHANUMERIC OR NUMERIC INPUT.*
*   ON FINDING AN ERROR, THE CURRENT SCREEN IS REJECTED, AND THE     *
*   USER HAS A CHANCE TO REENTER THE FAULTY FIELDS.THE ROUTINE USES *
*  SCREENS CALLED CRTFORMS THAT PROMPT THE USER TO ENTER THE DATA    *
*  DATA INTO THE CORRECT FIELDS.                                     *
**********************************************************************
*                                                                    *
*               PROGRAM UPDATED BY JAMES LIZOTTE                     *
*                          MAY 1986                                  *
*                                                                    *
**********************************************************************
MODIFY FILE METALS
 COMPUTE
  ACTION/A1=;
   REPLY/A1=;
 CRTFORM  LINE 1
  "           IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  "           :                 INSTRUCTIONS                :"
  "           :   END-ENTERED IN ANY FIELD WILL END ROUTINE  :"
  "           :   TAB-WILL MOVE CURSOR FROM FIELD TO FIELD   :"
  "           :        PRESS ENTER WHEN ALL FIELDS FILLED    :"
  "           HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  "    "
  "                          INPUT NEW RECORD"
  "    "
  "MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM"
  "ALLOY NAME : <NAME  <45 DATE (YYMMDD): <DATE"
  "ASTM ID CODE : <ID"
  "ALLOY COMPOSITION (WT%) :"
  " <COMP"
  "COMMENTS : <REMARKS1"
  "  (CONT) : <REMARKS2"
*****************************************************************************
* AFTER ENTERING THE ALLOY'S IDENTIFYING DATA, CHECK FOR A DUPLICATE ALLOY *
*  IN THE DATABASE, AND IF ONE EXISTS, REJECT THIS SCREEN AND PROMPT THE   *
*  OPERATOR FOR REENTRY. OTHERWISE INCLUDE THE DATA IN THE DATABASE AND    *
*  BRANCH TO INPUT NEXT SEGMENT (IN THIS CASE STRENGTH PROPERTIES)         *
*****************************************************************************
 MATCH NAME ID
   ON NOMATCH INCLUDE
   ON NOMATCH GOTO AONE
    ON MATCH TYPE "DUPLICATE ASTM CODE  - REENTER: "
    ON MATCH REJECT
    ON MATCH GOTO TOP
*****************************************************************************
* PROMPT AND ENTER STRENGTH PROPERTY IDENTIFYING DATA (CASE AONE)          *
*****************************************************************************
CASE AONE
 COMPUTE
   NEXT_TABLE=NEXT_TABLE;
  CRTFORM LINE 1
```

```
    "         IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
    "         :                 INSTRUCTIONS                  :"
    "         :   END-ENTERED IN ANY FIELD WILL END ROUTINE   :"
    "         :   TAB-WILL MOVE CURSOR FROM FIELD TO FIELD    :"
    "         :        PRESS ENTER WHEN ALL FIELDS FILLED     :"
    "         HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   "    "
    "                      ENTER STRENGTH PROPERTIES"
   "MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM"
    "</1"
    "    ENTER <D.NEXT_TABLE AS TABLE NUMBER: <TABLE_NUM"
    "    "
    "    STRAIN RATE (1/S) : <SR "
   "REFERENCE : <REF1A"
   "   (CONT) : <REF1B"
*************************************************************************
* IF NONE, OR NO MORE STRENGTH PROPERTIES TO ENTER, BRANCH TO INPUT NEXT *
*  SEGMENT OF DATA, (IN THIS CASE LEFM PROPERTIES -CASE BONE ) ,ELSE     *
*  CHECK IF ENTERING DUPLICATE STRENGTH PROPERTIES, AND BRANCH TO INPUT  *
*  STRENGTH PROPERY TEMPERATURE TABLE, ( -CASE ATWO )                    *
*************************************************************************
 IF TABLE_NO IS-NOT PRESENT GOTO BONE;
 MATCH TABLE_NO
   ON NOMATCH INCLUDE
   ON MATCH REJECT
   ON MATCH GOTO AONE
 COMPUTE
   NAME=NAME;
   MATCH NAME
    ON MATCH COMPUTE
     NEXT_TABLE=TABLE_NUM+1;
    ON MATCH UPDATE NEXT_TABLE
    ON MATCH CONTINUE TO TABLE_NUM
   GOTO ATWO
ENDCASE
*************************************************************************
* ENTER STRENGTH PROPERTY TABLE                                         *
*************************************************************************
CASE ATWO
  CRTFORM LINE 1
     "         IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
     "         :                 INSTRUCTIONS                  :"
     "         :   END-ENTERED IN ANY FIELD WILL END ROUTINE   :"
     "         :   TAB-WILL MOVE CURSOR FROM FIELD TO FIELD    :"
     "         :        PRESS ENTER WHEN ALL FIELDS FILLED     :"
     "         HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   "    "
    "          <48 REDUCTION <60 YOUNG'S"
    " TEMPERATURE  YIELD STRESS  UTS  ELONGATION  IN AREA   MODULUS"
    "  (CELSIUS)      (MPA)     (MPA)     %          %        (MPA)"
   "MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM"
    "<3 <S_TEM <16 <YS <27 <UTS <38 <ELON <50 <RA <60 <YM_MA EE <YM_EX"
    "<3 <S_TEM <16 <YS <27 <UTS <38 <ELON <50 <RA <60 <YM_MA EE <YM_EX"
    "<3 <S_TEM <16 <YS <27 <UTS <38 <ELON <50 <RA <60 <YM_MA EE <YM_EX"
    "<3 <S_TEM <16 <YS <27 <UTS <38 <ELON <50 <RA <60 <YM_MA EE <YM_EX"
    "<3 <S_TEM <16 <YS <27 <UTS <38 <ELON <50 <RA <60 <YM_MA EE <YM_EX"
    "<3 <S_TEM <16 <YS <27 <UTS <38 <ELON <50 <RA <60 <YM_MA EE <YM_EX"
    "<3 <S_TEM <16 <YS <27 <UTS <38 <ELON <50 <RA <60 <YM_MA EE <YM_EX"
```

```
************************************************************************
* IF NONE OR NO MORE LINES IN TABLE, BRANCH BACK TO INPUT MORE STRENGTH *
* PROPERTY TABLES, ( -CASE AONE ) OTHERWISE CHECK IF TEMPERATURE        *
* MATCHES ONE ALREADY INPUT, REJECT DUPLICATES, ACCEPT NEW TEMPERATURES *
* AND BRANCH BACK TO INPUT MORE LINES IN TABLE (-CASE ATWO )            *
************************************************************************
  IF S_TEMP IS-NOT PRESENT GOTO AONE;
  MATCH S_TEMP
    ON MATCH TYPE "FIELD MATCHES:  <D.S_TEMP ROW REJECTED"
    ON NOMATCH INCLUDE
    GOTO ATWO
ENDCASE
************************************************************************
*     PROMPT AND ENTER LEFM PROPERTIES                                  *
************************************************************************
CASE BONE
  CRTFORM LINE 1
   "           IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   "           :               INSTRUCTIONS                      :"
   "           :   END-ENTERED IN ANY FIELD WILL END ROUTINE     :"
   "           :   TAB-WILL MOVE CURSOR FROM FIELD TO FIELD      :"
   "           :       PRESS ENTER WHEN ALL FIELDS FILLED        :"
   "           HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   "                        ENTER LEFM PROPERTIES"
  "MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM"
   "</1"
   "<48 ZIRC ONLY"
   "YIELD STRESS (MPA) <LESTRESS <46 HCC <LE_HCC"
   "LOADING RATE (KN/S) <LERATE <46 (H) (MG/KG) <LE_H_CON"
   "ORIENTATION <LE_ORIENT"
   "REFERENCE <LE_REF1"
   "REFERENCE <LE_REF2"
   "</1"
   "HARDNESS <HARD1"
   "HARDNESS SCALE <SCALE1"
   "ASTM GRAIN SIZE <GRAIN1"
*
* IF NONE OR NO MORE, BRANCH TO INPUT NEXT SEGMENT OF DATA,IN THIS CASE
* EPFM PROPERTIES (CASE - CONE )
*
  IF LESTRESS IS-NOT PRESENT GOTO CONE;
  MATCH LESTRESS LERATE
    ON MATCH TYPE "FIELD MATCHES:  <D.LESTRESS  REJECTED"
    ON NOMATCH INCLUDE
    GOTO BTWO
ENDCASE
************************************************************************
* INPUT LEFM PROPERTIES IN TABLE FORM                                   *
************************************************************************
CASE BTWO
  CRTFORM LINE 1
     "           IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
     "           :               INSTRUCTIONS                      :"
     "           :   END-ENTERED IN ANY FIELD WILL END ROUTINE     :"
     "           :   TAB-WILL MOVE CURSOR FROM FIELD TO FIELD      :"
     "           :       PRESS ENTER WHEN ALL FIELDS FILLED        :"
     "           HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    " "
    "                                FILL IN K1C K1A TABLE"
    "                    IMMMMMMMMMMMMMMKMMMMMMMMMMMKMMMMMMMMMMMM;"
    "                    :   TEMPERATURE :    K1C    :    K1A      :"
    "                    :     (CELSIUS) : MPA(M)1/2 : MPA(M)1/2   :"
    "                    HMMMMMMMMMMMMMMJMMMMMMMMMMMJMMMMMMMMMMMM<"
    "<21 <LEFM_TEMP <36 <K1C <47 <K1A"
   "<21 <LEFM_TEMP <36 <K1C  <47 <K1A"
   "<21 <LEFM_TEMP <36 <K1C  <47 <K1A"
   "<21 <LEFM_TEMP <36 <K1C  <47 <K1A"
   "<21 <LEFM_TEMP <36 <K1C  <47 <K1A"
   "<21 <LEFM_TEMP <36 <K1C  <47 <K1A"
************************************************************************
* IF NONE OR NO MORE LINES IN TABLE BRANCH BACK TO INPUT NEXT SET OF *
* LEFM PROPERTIES (CASE - BONE )                                       *
************************************************************************
  IF L_TEMP IS-NOT PRESENT GOTO BONE;
  MATCH L_TEMP
    ON MATCH TYPE "FIELD MATCHES:  <D.L_TEMP  REJECTED"
    ON NOMATCH INCLUDE
    GOTO BTWO
ENDCASE
************************************************************************
*     PROMPT AND ENTER EPFM PROPERTIES                                 *
************************************************************************
CASE CONE
  CRTFORM LINE 1
   "          IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   "          :                  INSTRUCTIONS                :"
   "          :   END-ENTERED IN ANY FIELD WILL END ROUTINE   :"
   "          :   TAB-WILL MOVE CURSOR FROM FIELD TO FIELD    :"
   "          :        PRESS ENTER WHEN ALL FIELDS FILLED     :"
   "          HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   "                        ENTER EPFM PROPERTIES"
  "MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM
   "</1"
   "<49 ZIRC ONLY"
   "YIELD STRESS (MPA) <EPSTRESS <46 HCC <EP_HCC"
   "LOADING RATE (N/S) <EPRATE <46 (H) (MG/KG) <EP_H_CON"
   "ORIENTATION <EP_ORIENT"
   "REFERENCE <EP_REF1"
   "REFERENCE <EP_REF2"
   "</1"
   "HARDNESS <HARD2"
   "HARDNESS SCALE <SCALE2"
   "ASTM GRAIN SIZE <GRAIN2"
************************************************************************
* IF NONE OR NO MORE BRANCH TO INPUT FATIGUE DATA, (CASE - DONE )    *
************************************************************************
  IF EPSTRESS IS-NOT PRESENT GOTO DONE;
  MATCH EPSTRESS
    ON MATCH TYPE "FIELD MATCHES:  <D.EPSTRESS  REJECTED"
    ON NOMATCH INCLUDE
    GOTO CTWO
ENDCASE
******************************************************************************
* ENTER IDENTIFYING DATA FOR EPFM TABLES, AND BRANCH TO INPUT DESIRED TABLE. *
*   EITHER LOAD/DISP TABLE (CASE -CFOUR) OR BOTH J/DA AND LOAD/DISP TABLES,  *
*   (CASE -CTHREE )                                                          *
```

```
****************************************************************************
CASE CTWO
  CRTFORM LINE 1
    "          IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
    "          :                 INSTRUCTIONS                   :"
    "          :   END-ENTERED IN ANY FIELD WILL END ROUTINE    :"
    "          :   TAB-WILL MOVE CURSOR FROM FIELD TO FIELD     :"
    "          :        PRESS ENTER WHEN ALL FIELDS FILLED      :"
    "          HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  "                          ENTER EPFM PROPERTIES"
  "MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM"
   "</2"
   " ENTER A UNIQUE SPECIMEN CODE 1 - 10 LETTERS LONG: <CODE"
   "TEMPERATURE <E_TEMP  <30 J1C <J1C "
   " (CELSIUS)                KJ/(M)2"
   "</4"
   "TO ENTER J VS DELTA-A VALUES FOR THIS J1C HIT 'J' <REPLY"
   "TO ENTER LOAD VS DISP VALUES FOR THIS J1C HIT 'L' "
  IF CODE IS-NOT PRESENT GOTO DONE;
  MATCH CODE
    ON MATCH TYPE "FIELD MATCHES:  <D.CODE  REJECTED"
    ON NOMATCH INCLUDE
  IF REPLY EQ 'J' THEN GOTO CTHREE
  ELSE IF REPLY EQ 'L' THEN GOTO CFOUR
  ELSE GOTO CTWO;
ENDCASE
*********************************************************************
*                        J VS DELTA-A TABLE                         *
*********************************************************************
CASE CTHREE
  CRTFORM LINE 1
   "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   "                :                INSTRUCTIONS             :"
   "                :                                         :"
   "                :  TAB KEY- TO MOVE AROUND FIELDS         :"
   "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED :"
   "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   " "
   "                       ENTER THE J VS DELTA-A VALUES"
    "                    IMMMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMMM;"
    "                    :       J        :     DELTA-A     :"
    "                    :                :                 :"
    "                    HMMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMMM<"
    " <24  <JJ  <39  <DELTA_A"
    " <24  <JJ  <39  <DELTA_A"
    " <24  <JJ  <39  <DELTA_A"
    " <24  <JJ  <39  <DELTA_A"
    " <24  <JJ  <39  <DELTA_A"
    " <24  <JJ  <39  <DELTA_A"
    " <24  <JJ  <39  <DELTA_A"
**************************************************************************
* IF NONE OR NO MORE, THEN BRANCH TO INPUT LOAD/DISP TABLE (CASE -CFOUR)  *
**************************************************************************
  IF JJ IS-NOT PRESENT THEN GOTO CFOUR;
  MATCH JJ DELTA_A
    ON MATCH TYPE "FIELD MATCHES:  <D.JJ AND <D.DELTA_A REJECTED"
    ON NOMATCH INCLUDE
    GOTO CTHREE
```

```
ENDCASE
***********************************************************************
*                      LOAD VS DISPLACEMENT TABLE                     *
***********************************************************************
CASE CFOUR
  CRTFORM LINE 1
   "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   "                :             INSTRUCTIONS               :"
   "                :                                        :"
   "                :  TAB KEY- TO MOVE AROUND FIELDS        :"
   "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED :"
   "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   " "
   "                         ENTER LOAD VS DISP VALUES"
    "                     IMMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMM;"
    "                     :     LOAD      :      DISP      :"
    "                     :               :                :"
    "                     HMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMM<"
   " <27 <LOAD <44 <DISP"
   " <27 <LOAD <44 <DISP"
   " <27 <LOAD <44 <DISP"
   " <27 <LOAD <44 <DISP"
   " <27 <LOAD <44 <DISP"
   " <27 <LOAD <44 <DISP"
   " <27 <LOAD <44 <DISP"
***********************************************************************
* IF NONE OR NOMORE, BRANCH TO INPUT MORE EPFM TABLES ( CASE -CTWO )  *
***********************************************************************
  IF LOAD IS-NOT PRESENT THEN GOTO CTWO;
  MATCH LOAD DISP
    ON MATCH TYPE "FIELD MATCHES:  <D.LOAD AND <D.DISP REJECTED"
    ON NOMATCH INCLUDE
    GOTO CFOUR
ENDCASE
*******************************************************************
*      PROMPT AND ENTER FATIGUE PROPERTIES                        *
*******************************************************************
CASE DONE
  CRTFORM LINE 1
   "          IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   "          :                 INSTRUCTIONS                    :"
   "          :   END-ENTERED IN ANY FIELD WILL END ROUTINE     :"
   "          :   TAB-WILL MOVE CURSOR FROM FIELD TO FIELD      :"
   "          :        PRESS ENTER WHEN ALL FIELDS FILLED       :"
   "          HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   "                    ENTER FATIGUE PROPERTIES"
  "MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM"
   "</1"
   "ENVIRONMENT <ENVIRON     <40 RATIO (PMIN/PMAX) <RATIO"
   "ORIENTATION <FAT_ORIENT   <40 TEST FREQ (HZ) <FREQ"
   "TEMPERATURE (CELSIUS) <FTEMP  <40 WAVE FORM <WAVE"
   "C <CMAN EE <CEXP"
   "M <MM"
   "DELTA-K RANGE FROM <LOWK  TO  <HIGHK  MPA(M)1/2 "
   "REFERENCE <FAT_REF1"
   "   (CONT) <FAT_REF2"
   "TO ENTER A VS N̄ OR DA/DN VS K TABLES, ENTER 'T' <REPLY"
***********************************************************************
```

```
* IF NONE OR NO MORE THEN BRANCH TO INPUT SCC PROPERTIES (CASE - EONE) *
************************************************************************
  IF FAT_TEMP IS-NOT PRESENT GOTO EONE;
 MATCH FAT_TEMP  RATIO  FREQ
    ON MATCH TYPE "FIELD MATCHES:  <D.FAT_TEMP <D.RATI <D.FREQ REJECTED"
    ON NOMATCH INCLUDE
************************************************************************
*   BRANCH TO INPUT FATIGUE TABLES (CASE - DDTWO, IF REPLY IS 'T')     *
************************************************************************
    IF REPLY EQ 'T' THEN GOTO DTWO
    ELSE GOTO DONE;
ENDCASE
*************************************************************************
*          INPUT A VS N TABLES                                          *
*************************************************************************
CASE DTWO
  CRTFORM LINE 1
   "                  IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   "                  :               INSTRUCTIONS            :"
   "                  :                                       :"
   "                  :  TAB KEY- TO MOVE AROUND FIELDS        :"
   "                  :  PRESS ENTER WHEN ALL FIELDS ARE FILLED :"
   "                  HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    "  "
    "                    ENTER THE CRACK SIZE AND CYCLE VALUES"
    "                     IMMMMMMMMMMMMMMKMMMMMMMMMMMMMMM;"
    "                     :  CRACK SIZE    :    CYCLES      :"
    "                     :     (MM)       :                :"
    "                     HMMMMMMMMMMMMMMJMMMMMMMMMMMMMMM<"
    " <27  <A_POINT  <42  <N_POINT"
    " <27  <A_POINT  <42  <N_POINT"
    " <27  <A_POINT  <42  <N_POINT"
    " <27  <A_POINT  <42  <N_POINT"
    " <27  <A_POINT  <42  <N_POINT"
    " <27  <A_POINT  <42  <N_POINT"
    " <27  <A_POINT  <42  <N_POINT"
***************************************************************************
* IF NONE OR NO MORE BRANCH TO INPUT DA/DN VS DELTA-K TABLES (CASE DTHREE) *
***************************************************************************
  IF CRACK_SIZE IS-NOT PRESENT GOTO DTHREE;
 MATCH CRACK_SIZE CYCLES
    ON MATCH TYPE "FIELD MATCHES:  <D.CRACK_SIZE AND <D.CYCL REJECTED"
    ON NOMATCH INCLUDE
    GOTO DTWO
ENDCASE
*************************************************************************
*          INPUTTING DA/DN VS DELTA_K TABLES                            *
*************************************************************************
CASE DTHREE
  CRTFORM LINE 1
    "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
    "                 :               INSTRUCTIONS            :"
    "                 :                                       :"
    "                 :  TAB KEY- TO MOVE AROUND FIELDS        :"
    "                 :  PRESS ENTER WHEN ALL FIELDS ARE FILLED :"
    "                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    " "
    "                          ENTER THE GROWTH RATE DATA"
```

```
     "                       IMMMMMMMMMMKMMMMMMMMMMMMMMMKMMMMMMMMMMM;"
     "                       :  GROWTH  :     GROWTH    : DELTA-K   :"
     "                       :   RATE   :    EXPONENT   :           :"
     "                       HMMMMMMMMMMJMMMMMMMMMMMMMMMJMMMMMMMMMMM<"
     "<24 <GROWTH_RATE <39 <POWER <52 <DELTA_K"
     "<24 <GROWTH_RATE <39 <POWER <52 <DELTA_K"
     "<24 <GROWTH_RATE <39 <POWER <52 <DELTA_K"
     "<24 <GROWTH_RATE <39 <POWER <52 <DELTA_K"
     "<24 <GROWTH_RATE <39 <POWER <52 <DELTA_K"
     "<24 <GROWTH_RATE <39 <POWER <52 <DELTA_K"
     "<24 <GROWTH_RATE <39 <POWER <52 <DELTA_K"
****************************************************************************
* IF NONE OR NO MORE, BRANCH TO INPUT MORE FATIGUE PROPERTIES (CASE DONE)  *
****************************************************************************
  IF DA_DN IS-NOT PRESENT GOTO DONE;
  MATCH DA_DN DELTA_K
    ON MATCH TYPE "FIELD MATCHES:  <D.DA_DN AND <D.DELTA_K  REJECTED"
    ON NOMATCH INCLUDE
    GOTO DTHREE
ENDCASE
*************************************************************************
*                   PROMPT AND ENTER SCC PROPERTIES                     *
*************************************************************************
CASE EONE
  CRTFORM LINE 1
     "          IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
     "          :                  INSTRUCTIONS                     :"
     "          :   END-ENTERED IN ANY FIELD WILL END ROUTINE       :"
     "          :   TAB-WILL MOVE CURSOR FROM FIELD TO FIELD        :"
     "          :       PRESS ENTER WHEN ALL FIELDS FILLED          :"
     "          HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   "                ENTER STRESS CORROSION PROPERTIES"
   " <50 ZIRC ONLY"
   "ENVIRONMENT <SCC_ENVI   <45 HCC  <SCC_HCC"
   "FREE POTENTIAL (MV) <FREE_POT  <45 (H) (MG/KG) <SCC_H_CON"
   "TEST POTENTIAL (MV) <TEST_P <45  TEMPERATURE(CELSIUS) <SCC_TEMP"
   "KISCC MPA(M)1/2  <KISCC        <45 K1H MPA(M)1/2 <K1H"
   "VELOCITY IN K INDEPENDENT RANGE (M/S) <VELOCI EE <VELOC_EX"
   "THERMAL HISTORY "
   "<THIST"
   "IRRADIATION HISTORY"
   "<IHIST"
   "REFERENCE <SCC_REF1"
   "   (CONT) <SCC_REF2"
   "TO ENTER A VS T AND DA/DT VS K TABLES ENTER 'T' <REPLY"
****************************************************************************
* IF NONE OR NO MORE BRANCH TO INPUT TOUGHNESS PROPERTIES (CASE FONE)     *
****************************************************************************
  IF SCC_TEMP IS-NOT PRESENT GOTO FONE;
  MATCH SCC_TEMP
    ON MATCH TYPE "FIELD MATCHES:  <D.SCC_TEMP  REJECTED"
    ON NOMATCH INCLUDE
    IF REPLY EQ 'T' THEN GOTO ETWO
    ELSE GOTO EONE;
ENDCASE
****************************************************************************
*                     INPUT SCC TABLE - A VS T                            *
****************************************************************************
```

```
CASE ETWO
  CRTFORM LINE 1
   "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   "                :                 INSTRUCTIONS              :"
   "                :                                          :"
   "                :  TAB KEY- TO MOVE AROUND FIELDS          :"
   "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
   "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    "  "
   "                    ENTER THE CRACK LENGTH AND TIME VALUES"
   "                     IMMMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMMMM;"
   "                     :  CRACK LENGTH  :       TIME       :"
   "                     :      (MM)      :       (SEC)      :"
   "                     HMMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMMMM<"
    " <27  <A_VALUE  <42  <T_VALUE"
    " <27  <A_VALUE  <42  <T_VALUE"
    " <27  <A_VALUE  <42  <T_VALUE"
    " <27  <A_VALUE  <42  <T_VALUE"
    " <27  <A_VALUE  <42  <T_VALUE"
    " <27  <A_VALUE  <42  <T_VALUE"
    " <27  <A_VALUE  <42  <T_VALUE"
  IF CRACK_LENGTH IS-NOT PRESENT GOTO ETHREE;
  MATCH CRACK_LENGTH TIME
    ON MATCH TYPE "FIELD MATCHES:  <D.CRACK_LEN  REJECTED"
    ON NOMATCH INCLUDE
    GOTO ETWO
ENDCASE
*******************************************************************************
*                   INPUT SCC TABLE - DA/DT VS DELTA_K                       *
*******************************************************************************
CASE ETHREE
  CRTFORM LINE 1
     "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
     "                :                 INSTRUCTIONS              :"
     "                :                                          :"
     "                :  TAB KEY- TO MOVE AROUND FIELDS          :"
     "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
     "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
     " "
     "                          ENTER THE CRACK SPEED DATA"
    "                     IMMMMMMMMMKMMMMMMMMMMMMMMKMMMMMMMMMM;"
    "                     :  CRACK   :     SPEED      :   SCC    :"
    "                     :  SPEED   :    EXPONENT    : DELTA-K  :"
    "                     HMMMMMMMMMJMMMMMMMMMMMMMMJMMMMMMMMMM<"
    "<24 <CRACK_SPEED <39 <SPEED_EXPON <52 <SCC_DELTA_K"
    "<24 <CRACK_SPEED <39 <SPEED_EXPON <52 <SCC_DELTA_K"
    "<24 <CRACK_SPEED <39 <SPEED_EXPON <52 <SCC_DELTA_K"
    "<24 <CRACK_SPEED <39 <SPEED_EXPON <52 <SCC_DELTA_K"
    "<24 <CRACK_SPEED <39 <SPEED_EXPON <52 <SCC_DELTA_K"
    "<24 <CRACK_SPEED <39 <SPEED_EXPON <52 <SCC_DELTA_K"
    "<24 <CRACK_SPEED <39 <SPEED_EXPON <52 <SCC_DELTA_K"
  IF DA_DT IS-NOT PRESENT GOTO EONE;
  MATCH DA_DT SCC_DELTA_K
    ON MATCH TYPE "FIELD MATCHES:  <D.DA_DT <D.SCC_DELTA_K  REJECTED"
    ON NOMATCH INCLUDE
    GOTO ETHREE
ENDCASE
***********************************************************************
```

```
*                  PROMPT AND ENTER TOUGHNESS PROPERTIES                  *
***************************************************************************
CASE FONE
  CRTFORM LINE 1
     "          IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
     "          :                  INSTRUCTIONS                 :"
     "          :   END-ENTERED IN ANY FIELD WILL END ROUTINE   :"
     "          :   TAB-WILL MOVE CURSOR FROM FIELD TO FIELD    :"
     "          :        PRESS ENTER WHEN ALL FIELDS FILLED     :"
     "          HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   "               ENTER TOUGHNESS (CHARPY) PROPERTIES"
  "MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM"
   "<1"
   "YIELD STRESS (MPA) <TYS"
   "IRRADIATION:  <MANTISS  EE <EXPONENT"
   "FLUENCE <FLUENCE"
   "N.D.T. (CELSIUS) <NDT"
   "FATT (CELSIUS) <FATT"
   "REFERENCE <TOUGH_REF1"
   "   (CONT) <TOUGH_REF2"
***************************************************************************
*   IF NONE OR NO MORE THEN BRANCH TO END OF ROUTINE                      *
***************************************************************************
  IF TYS IS-NOT PRESENT GOTO GONE;
  MATCH TYS  MANTISSA
    ON MATCH TYPE "FIELD MATCHES:  <D.TYS <D.MANTISSA  REJECTED"
    ON NOMATCH INCLUDE
    GOTO FTWO
ENDCASE
***************************************************************************
*               INPUT CHARPY ENERGY VALUE TABLE                           *
***************************************************************************
CASE FTWO
  CRTFORM  LINE 1
   "              IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   "              :              INSTRUCTIONS              :"
   "              :                                        :"
   "              :  TAB KEY- TO MOVE AROUND FIELDS        :"
   "              :  PRESS ENTER WHEN ALL FIELDS ARE FILLED :"
   "              HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   "  "
    "                      ENTER VALUES IN CHARPY TABLE "
    "      IMMMMMMMMMKMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMKMMMMMMMMM;"
    "      :  CHARPY  :                C.V.N (JOULES)          :  MILLS  :"
    "      :   TEMP   :     (1)      (2)       (3)      (4)     : LAT EXP :"
    "      HMMMMMMMMMJMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMJMMMMMMMMM<"
    " <9 <CH_TEMP <21 <CVN1 <31 <CVN2 <41 <CVN3 <50 <CVN4 <63 <MLS"
    " <9 <CH_TEMP <21 <CVN1 <31 <CVN2 <41 <CVN3 <50 <CVN4 <63 <MLS"
    " <9 <CH_TEMP <21 <CVN1 <31 <CVN2 <41 <CVN3 <50 <CVN4 <63 <MLS"
    " <9 <CH_TEMP <21 <CVN1 <31 <CVN2 <41 <CVN3 <50 <CVN4 <63 <MLS"
    " <9 <CH_TEMP <21 <CVN1 <31 <CVN2 <41 <CVN3 <50 <CVN4 <63 <MLS"
    " <9 <CH_TEMP <21 <CVN1 <31 <CVN2 <41 <CVN3 <50 <CVN4 <63 <MLS"
    " <9 <CH_TEMP <21 <CVN1 <31 <CVN2 <41 <CVN3 <50 <CVN4 <63 <MLS"
**************************************************************************
* IF NONE OR NO MORE, BRANCH TO INPUT NEXT SET OF CHARPY VALUES    *
**************************************************************************
  IF CH_TEMP IS-NOT PRESENT GOTO FONE;
  MATCH CH_TEMP
```

```
    ON MATCH TYPE "FIELD MATCHES:  <D.CH_TEMP REJECTED"
    ON NOMATCH INCLUDE
    GOTO FTWO
ENDCASE
***********************************************************************
*  THIS CASE ENABLES THE USER TO ENTER THERMAL,ELECTRIC AND MAGNETIC   *
*   PROPERTIES INTO THE DATABASE.                                      *
***********************************************************************
CASE GONE
  CRTFORM LINE 1
   "                  IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   "                  :                INSTRUCTIONS              :"
   "                  :                                          :"
   "                  :  TAB KEY- TO MOVE AROUND FIELDS          :"
   "                  :  END - IN ANY FIELD WILL EXIT ROUTINE    :"
   "                  HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   "  "
   "                 ENTER THE PROPERTIES FOR THE FOLLOWING PROMPTS"
  "MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM"
    "     ELECTRIC RES: <25 <ER "
    "     SLOPE OF ER: <25 <SLOPE"
    "     VARIATION IN ER: <25 <ER_VAR"
    "     CURIE TEMP(CELSIUS): <25 <CT"
    "     FIELD STRENGTH: <25 <CRITICAL_FS"
    "     REFERENCE:<NDE_REF1"
    "     REFERENCE:<NDE_REF2"
***********************************************************************
*   IF NONE THE BRANCH TO END OF ROUTINE                               *
***********************************************************************
  IF ER IS-NOT PRESENT THEN GOTO FINNISH;
   MATCH ER
   ON MATCH TYPE " FIELD MATCHES:  <D.ER  REJECTED"
   ON NOMATCH INCLUDE
   GOTO GTWO
ENDCASE
***********************************************************************
*       INPUT MAGNETIC PERMEABILITY TABLE.                             *
***********************************************************************
CASE GTWO
   CRTFORM LINE 1
   "                  IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   "                  :                INSTRUCTIONS              :"
   "                  :                                          :"
   "                  :  TAB KEY- TO MOVE AROUND FIELDS          :"
   "                  :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
   "                  HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    "  "
    "          ENTER THE MAGNETIC PERMEABILITY AND FIELD STRENGTH VALUES"
    "                       IMMMMMMMMMMMMMKMMMMMMMMMMMMMM;"
    "                       :  MAGNETIC    :    FIELD     :"
    "                       : PERMEABILITY  :   STRENGTH   :"
    "                       HMMMMMMMMMMMMMJMMMMMMMMMMMMMM<"
    " <24  <PERM  <42  <FS"
    " <24  <PERM  <42  <FS"
    " <24  <PERM  <42  <FS"
    " <24  <PERM  <42  <FS"
    " <24  <PERM  <42  <FS"
    " <24  <PERM  <42  <FS"
    " <24  <PERM  <42  <FS"
************************************************************************
*    IF NO MORE VALUES INPUT NEXT SET OF PROPERTIES (CASE GONE)        *
************************************************************************
     IF PERM IS-NOT PRESENT THEN GOTO GTHREE;
    MATCH PERM
     ON MATCH TYPE "FIELD MATCHES <D.PERM <D.FS  REJECTED:"
     ON NOMATCH INCLUDE
     GOTO GTWO
     ENDCASE
************************************************************************
*               ENTERING VALUES IN THE CONDUCTIVITY TABLE              *
************************************************************************
CASE GTHREE
     CRTFORM LINE 1
    "                   IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
    "                   :                INSTRUCTIONS          :"
    "                   :                                      :"
    "                   :  TAB KEY- TO MOVE AROUND FIELDS      :"
    "                   :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
    "                   HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    " "
    "                            ENTER THE CONDUCTIVITY DATA"
    "                   IMMMMMMMMMMMMKMMMMMMMMMMMMMKMMMMMMMMMMMMMM;"
    "                   : TEMPERATURE :  EXPANSION   : CONDUCTIVITY :"
    "                   :  (CELSIUS)  : COEFFICIENT  :              :"
    "                   HMMMMMMMMMMMMJMMMMMMMMMMMMMJMMMMMMMMMMMMMM<"
    "<21  <NDE_TEMP <34 <EXPAN_COEFF <48 <CONDUCTIV"
    "<21  <NDE_TEMP <34 <EXPAN_COEFF <48 <CONDUCTIV"
    "<21  <NDE_TEMP <34 <EXPAN_COEFF <48 <CONDUCTIV"
    "<21  <NDE_TEMP <34 <EXPAN_COEFF <48 <CONDUCTIV"
    "<21  <NDE_TEMP <34 <EXPAN_COEFF <48 <CONDUCTIV"
    "<21  <NDE_TEMP <34 <EXPAN_COEFF <48 <CONDUCTIV"
    "<21  <NDE_TEMP <34 <EXPAN_COEFF <48 <CONDUCTIV"
************************************************************************
*    IF NO MORE VALUES INPUT NEXT SET OF PROPERTIES (CASE GONE)        *
************************************************************************
     IF NDE_TEMP IS-NOT PRESENT THEN GOTO GONE;
     MATCH NDE_TEMP
     ON MATCH TYPE " FIELD MATCHES <D.NDE_TEMP REJECTED"
     ON NOMATCH INCLUDE
     GOTO GTHREE
     ENDCASE
************************************************************************
* DISPLAY MESSAGE THAT  ALLOY INPUT IS COMPLETE, AND BRANCH TO TOP CASE *
* TO ENTER NEXT ALLOY ( THIS IS DONE BY DEFAULT )                       *
************************************************************************
CASE FINNISH
COMPUTE
  NEXT_TABLE=0;
  CRTFORM LINE 1
   "       IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   "       :    INPUT COMPLETED FOR ALLOY :                :"
   "       :          <D.NAME                 :"
   "       :                                                :"
   "       :           CHOOSE AN OPTION BELOW TO PROCEED!   :"
   "       :                                                :"
   "       HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
```

```
    "</2"
    "
    "                                           IMMMMMM;    "
    "                    X - TO EXIT            :<ACTION   :  "
                         S - TO RESTART         HMMMMMM<"
    IF ACTION IS 'X' GOTO EXIT;
    IF ACTION IS 'S' GOTO TOP;
ENDCASE
DATA VIA FIDEL
END
```

```
***************************************************************************
*                                                                         *
*                              MBROWSE.FEX                                *
*                                                                         *
***************************************************************************
*  THIS ROUTINE BROWSES THROUGH THE METALS DATABASE AND DISPLAYS ALL THE *
* DATA IN A SEQUETIAL MANNER, PASSING FROM SEGMENT TO SEGMENT AND FROM   *
* ALLOY TO ALLOY UNTIL THE ENTIRE DATABASE HAS BEEN VIEWED.  NONE OF THE *
* DISPLAYED FIELDS CAN BE CHANGED, ONLY VIEWED.  TO CHANGE A FIELD, USE  *
* THE CHANGE/UPDATE OPTION ON THE MAIN MENU, OR EXECUTE 'CONTROL.FEX'    *
*    THIS ROUTINE CAN PASS FROM ONE ALLOY TO THE NEXT UNTIL THE USER     *
* REACHES AN ALLOY THAT HE/SHE WANTS TO VIEW IN MORE DETAIL.  TO DO THIS *
* THE USER MUST CHOOSE THE 'CHILD' OPTION.  THEN THE PROGRAM WILL        *
* DISPLAY THAT ALLOY'S RECORDED PROPERTIES, UNTIL EXHAUSTED, AND PASS    *
* TO THE NEXT ALLOY.                                                     *
***************************************************************************
*                                                                         *
*                PROGRAM UPDATED BY JAMES LIZOTTE                         *
*                          MAY 1986                                       *
*                                                                         *
***************************************************************************
MODIFY FILE METALS
 COMPUTE
  ACTION/A1=;
***************************************************************************
*      RETRIEVES NEXT ALLOY TO DISPLAY ITS DATA                           *
***************************************************************************
 NEXT NAME
   ON NONEXT GOTO EXIT
   ON NEXT CRTFORM LINE 1
 "IMMMMMMMMMMMMMMMMMMMMMMMMM ALLOY SCREEN MMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 ":                                                                    : "
 ":   ALLOY NAME : <D.NAME   <46 DATE (YYMMDD): <D.DATE        :"
 ":   ASTM ID CODE : <D.ID                                          :"
 ":   ALLOY COMPOSITION (WT%) :                                        :"
 ": <2 <D.COMP <76 :"
 ": COMNTS:<D.REMARKS1     :"
 ": (CONT):<D.REMARKS2     :"
 ":                                                                    :"
 ":                        C - TO VIEW CHILD   IMMMMM;                 :"
 ":                        X - TO EXIT         : <ACTION  :        <75  :"
 ":                        N - NEXT ALLOY      HMMMMM<                 :"
 ":                                                                    :"
 "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   ON NEXT IF ACTION EQ 'C' THEN GOTO SHOW2 ELSE IF ACTION EQ 'X' THEN
          GOTO EXIT ELSE GOTO TOP;
***************************************************************************
* CASE SHOW2 DISPLAYS THE CURRENT ALLOY'S STRENGTH PROPERTIES,            *
* IF THERE IS NO MORE STRENGTH PROPERTIES IN DATABASE, THE PROGRAM        *
* GOES TO DISPLAY LEFM PROPERTIES FOR THE CURRENT ALLOY. (CASE SHOW4)     *
***************************************************************************
CASE SHOW2
 NEXT TABLE_NO
   ON NONEXT GOTO SHOW4
   ON NEXT CRTFORM LINE 1
  "IMMMMMMMMMMMMMMMMMMMMM STRENGTH PROPERTIES MMMMMMMMMMMMMMMMMMMMMM;"
  ":                                                               : "
  ": TABLE #:<D.TABLE_NO                                                :"
  ": STRAIN RATE (1/S): <D.SR                                          :"
  ": REFERENCE :                                                        :"
  ":   <D.REF1A   :"
  ":   <D.REF1B   :"
  ":                                                                    :  "
  ":                  C - TO VIEW CHILD   IMMMMM;                       :"
  ":                  N - NEXT ALLOY      :<ACTION   :                      :"
  ":                                      HMMMMM<                       :"
  ":                                                                    :"
  "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 ON NEXT IF ACTION IS 'N' THEN GOTO TOP ELSE
         IF ACTION IS 'C' THEN GOTO SHOW3 ELSE GOTO SHOW2;
ENDCASE
**********************************************************************
* CASE SHOW3 WILL DISPLAY THE STRENGTH PROPERTY TABLE, LINE BY LINE  *
* FOR THE CURRENT ALLOY AND CURRENT TABLE NUMBER.  WHEN THERE ARE NO *
* MORE LINES IN THE TABLE, THE PROGRAM BRANCHES TO DISPLAY THE NEXT  *
* STRENGTH PROPERTY TABLE. (CASE SHOW2)                              *
**********************************************************************
CASE SHOW3
  NEXT S_TEMP
    ON NONEXT GOTO SHOW2
    ON NEXT CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMM STRENGTH TABLE MMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":                                                                    : "
":                <51 REDUCTION <63 YOUNG'S    :"
": TEMPERATURE  YIELD STRESS   UTS   ELONGATION    IN AREA   MODULUS    :"
":  (CELSIUS)      (MPA)       (MPA)      %           %        (MPA)    :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                    : "
":  <3 <D.S_TEM <16 <D.YS <27 <D.UTS <38 <D.ELON <50 <D.RA
  <60 <D.YM_MAN EE <D.YM_EX :"
":                                                                    :"
":                                    IMMMMM;                         :"
":               T - NEXT TABLE       :<ACTION   :                        :'
":                                    HMMMMM<                         :"
":                                                                    :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    ON NEXT IF ACTION IS 'T' THEN GOTO SHOW2 ELSE
           GOTO SHOW3;
  ENDCASE
************************************************************************
* CASE SHOW4 DISPLAYS THE CURRENT ALLOY'S LEFM PROPERTIES. IF THERE ARE  *
* NONE OR NO MORE LEFT, THE PROGRAM BRANCHES TO DISPLAY EPFM PROPERTIES  *
*  (CASE SHOW6)                                                          *
************************************************************************
CASE SHOW4
  NEXT LTEST_STRESS
    ON NONEXT GOTO SHOW6
    ON NEXT CRTFORM LINE 1
 "IMMMMMMMMMMMMMMMMMMMMMMMM LEFM PROPERTIES MMMMMMMMMMMMMMMMMMMMMMMMM;"
 ":                                                                   : "
 ":                                             ZIRC ONLY             :"
 ":   YIELD STRESS (MPA) <D.LESTRESS <46 HCC <D.LE_HCC           :"
 ":  LOADING RATE (KN/S) <D.LERATE <46 (H) (MG/KG) <D.LE_H_CON     :"
 ":  ORIENTATION <D.LE_ORIENT                                        :"
 ":  REF:<D.LE_REF1  :"
 ":  REF:<D.LE_REF2  :"
 ":  HARDNESS <D.HARD1                                                   :"
 ":  HARDNESS SCALE <D.SCALE1                                          :"
 ":  ASTM GRAIN SIZE <D.GRAIN1                                                       :'
 ":                                                                       :  "
 ":                    C - TO VIEW CHILD     IMMMMM;                     :"
 ":                    N - NEXT ALLOY        :<ACTION   :                       :"
 ":                    E - EPFM PROPERTIES  HMMMMM<                     :"
 ":                                                                       :"
 "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
ON NEXT IF ACTION IS 'N' THEN GOTO TOP ELSE
         IF ACTION IS 'C' THEN GOTO SHOW5 ELSE
         IF ACTION IS 'E' THEN GOTO SHOW6 ELSE GOTO SHOW4;
 ENDCASE
*************************************************************************
* CASE SHOW5 DISPLAYS LEFM TABLES.  IF THE CURRENT TABLE HAS NO MORE    *
* DATA THEN THE PROGRAM BRANCHES TO DISPLAY THE NEXT SET OF LEFM DATA   *
*                                                      (CASE SHOW4)    *
*************************************************************************
CASE SHOW5
 NEXT LEFM_TEMP
   ON NONEXT GOTO SHOW4
   ON NEXT CRTFORM LINE 1
  "IMMMMMMMMMMMMMMMMMMM K1C  KIA TABLE MMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  ":                                                                     : "
  ":              TEMPERATURE      K1C         K1A                        :"
  ":               (CELSIUS)    MPA(M)1/2     MPA(M)1/2                   :"
  ": <17 <D.LEFM_TEMP <32 <D.K1C  <43 <D.K1A                        :"
  ":                                                                     :"
  ":                 ---- PRESS ENTER TO CONTINUE ----                   :"
  "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  GOTO SHOW5
 ENDCASE
***********************************************************************
* CASE SHOW6 DISPLAYS THE CURRENT ALLOY'S EPFM PROPERTIES.            *
* THE PROGRAM CONTINUES THIS WAY UNTIL ALL SEGMENTS FOR THE CURRENT   *
* ALLOY ARE DISPLAYED OR THE USER BRANCHES TO VIEW THE NEXT ALLOY BY  *
* ENTERING 'X' FOR PARENT WHERE PROMPTED.                             *
***********************************************************************
CASE SHOW6
 NEXT ETEST_STRESS
   ON NONEXT GOTO SHOW10
   ON NEXT CRTFORM LINE 1
 "IMMMMMMMMMMMMMMMMMMMMMM EPFM PROPERTIES MMMMMMMMMMMMMMMMMMMMMMMM;"
 ":                                                                   : "
 ":                                               ZIRC ONLY           :"
 ": YIELD STRESS (MPA) <D.EPSTRESS <46 HCC <D.EP_HCC               :"
 ": LOADING RATE (N/S) <D.EPRATE <46 (H) (MG/KG) <D.EP_H_CON        :"
 ": ORIENTATION <D.EP_ORIENT                                          :"
 ": REF:  <D.EP_REF1 :"
 ": (CONT)<D.EP_REF2 :"
 ": HARDNESS <D.HARD2                                                :"
 ": HARDNESS SCALE <D.SCALE2                                       :"
 ": ASTM GRAIN SIZE <D.GRAIN2                                                     :'
 ":                                                                   :  "
 ":                    C - TO VIEW CHILD    IMMMMM;                   :"
 ":                    X - TO EXIT          :<ACTION   :                    :"
 ":                                         HMMMMM<                   :"
 ":                                                                   :"
 "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   ON NEXT IF ACTION IS 'X' THEN GOTO EXIT ELSE
           IF ACTION IS 'C' THEN GOTO SHOW7;
  ENDCASE
***************************************************************************
*  CASE SHOW7 DISPLAYS THE TEMPERATURE VS J1C VALUES. IF THERE ARE NO MORE  *
*    THEN THE PROGRAM BRANCHES BACK TO SHOW THE NEXT SET OF EPFM PROPERTIES *
*   (CASE SHOW 6).                                                          *
***************************************************************************
CASE SHOW7
  NEXT SPEC_CODE
    ON NONEXT GOTO SHOW6
    ON NEXT CRTFORM LINE 1
     "</2"
   "IMMMMMMMMMMMMMMMMMMMM TEMP J1C TABLE MMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   ":                                                                  : "
   ":   SPECIMEN CODE: <D.CODE                                        : "
   ":                                                                  : "
   ":                      IMMMMMMMMMMMMMMKMMMMMMMMMMMMMMM;             :"
   ":                      :  TEMPERATURE   :      J1C      :             :"
   ":                      :   (CELSIUS)    :   MPA(M)1/2   :             :"
   ":                      HMMMMMMMMMMMMMMJMMMMMMMMMMMMMMM<             :"
   ": <23 <D.E_TEMP <42 <D.J1C    <71 :"
   ":                                                                  : "
   ":                         C - TO VIEW CHILD   IMMMMM;               :"
   ":                         X - TO EXIT         :<ACTION   :            :"
   ":                                             HMMMMM<               :"
   "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    ON NEXT IF ACTION IS 'X' THEN GOTO EXIT ELSE
           IF ACTION IS 'C' THEN GOTO SHOW8;
  ENDCASE
****************************************************************************
* CASE SHOW8 DISPLAYS THE  JJ VS DELTA-A VALUE ASSOCIATED WITH THE J1C VALUE *
*   FROM THE ABOVE CASE. WHEN ALL THE VALUES HAVE BEEN DISPLAYED, THEN THE   *
*   LOAD VS DISPLACEMENT TABLE IS DISPLAYED (CASE SHOW9).                    *
****************************************************************************
CASE SHOW8
  NEXT JJ
    ON NONEXT GOTO SHOW9
    ON NEXT CRTFORM LINE 1
   "IMMMMMMMMMMMMMMMMMMMMMM J VS DELTA-A TABLE MMMMMMMMMMMMMMMMMMMMMMMM;"
   ":                                                                  : "
   ":                      IMMMMMMMMMMMMMMKMMMMMMMMMMMMMMM;             :"
   ":                      :       J        :    DELTA-A    :             :"
   ":                      :                :               :             :"
   ":                      HMMMMMMMMMMMMMMJMMMMMMMMMMMMMMM<             :"
   ": <26  <D.JJ  <41  <D.DELTA_A   <71 :"
   ":                                                                  :"
   ":                      ---- PRESS ENTER TO CONTINUE ----            :"
   "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    GOTO SHOW8
  ENDCASE
****************************************************************************
* CASE SHOW9 DISPLAYS THE LOAD VS DISPLACEMENT TABLE.WHEN THERE ARE NO MORE *
*  VALUES , THE PROGRAM BRANCHES BACK TO DISPLAY THE NEXT J1C TABLE VALUE.  *
* (CASE SHOW7.)                                                             *
****************************************************************************
CASE SHOW9
```

```
  NEXT LOAD
    ON NONEXT GOTO SHOW7
    ON NEXT CRTFORM LINE 1
   "IMMMMMMMMMMMMMMMMMMMMMM LOAD VS DISP TABLE MMMMMMMMMMMMMMMMMMMMMMMMM;"
   ":                                                                     : "
   ":                    IMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMM;                 :"
   ":                    :     LOAD       :       DISP      :                 :"
   ":                    :                :                 :                 :"
   ":                    HMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMM<                 :"
   ": <26 <D.LOAD <41 <D.DISP        <71 :"
   ":                                                                     :"
   ":                      ---- PRESS ENTER TO CONTINUE ----              :"
   "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    GOTO SHOW9
  ENDCASE
*************************************************************************
*  CASE SHOW10 DISPLAYS THE FATIGUE PROPERTIES. WHEN THEY ARE EXHAUSTED  *
*    BRANCHING OCCURS TO DISPLAY THE STRESS CORROSION PROPERTIES.(CASE   *
*    SHOW 13)                                                            *
*************************************************************************
CASE SHOW10
  NEXT FAT_TEMP
    ON NONEXT GOTO SHOW13
    ON NEXT CRTFORM LINE 1
 "IMMMMMMMMMMMMMMMMMMMMM FATIGUE PROPERTIES MMMMMMMMMMMMMMMMMMMMMMMMM;"
 ":                                                                     : "
 ":  ENVIRONMENT <D.ENVIRON  <43 RATIO (PMIN/PMAX) <D.RATIO    :"
 ":  ORIENTATION <D.FAT_ORIENT <43 TEST FREQ (HZ) <D.FREQ    :"
 ":  TEMPERATURE (CELSIUS) <D.FTEMP  <43 WAVE FORM <D.WAVE     :"
 ":  C <D.CMAN EE <D.CEXP  <43 M <D.MM                   :"
 ":  DELTA-K RANGE FROM <D.LOWK  TO  <D.HIGHK  MPA(M)1/2              :"
 ": REF: <D.FAT_REF1  :"
 ":      <D.FAT_REF2  :"
 ":                                                                   : "
 ":                        C - TO VIEW CHILD   IMMMMM;                :"
 ":                        X - TO EXIT         :<ACTION   :              :"
 ":                                            HMMMMM<                :"
 ":                                                                   :"
 "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    ON NEXT IF ACTION IS 'X' THEN GOTO EXIT
           ELSE GOTO SHOW11;
  ENDCASE
************************************************************************
*  CASE SHOW11 DISPLAYS THE CRACK SIZE VS CYCLE TABLE. WHEN THERE ARE   *
* NO MORE ENTRIES THE PROGRAM BRANCHES TO  DISPLAY THE  GROWTH RATE VS  *
*  DELTA-K TABLE. (CASE SHOW12).                                        *
************************************************************************
CASE SHOW11
  NEXT CRACK_SIZE
    ON NONEXT GOTO SHOW12
    ON NEXT CRTFORM  LINE 1
   "IMMMMMMMMMMMMMMMMMMM CRACK SIZE VS CYCLES TABLE MMMMMMMMMMMMMMMMMMM;"
   ":                                                                 : "
   ":                    IMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMM;             :"
   ":                    :  CRACK SIZE    :    CYCLES       :             :"
   ":                    :     (MM)       :                 :             :"
   ":                    HMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMM<             :"
   ": <24  <D.A_POINT  <39  <D.N_POINT <70  :"
   ":                                                                          :"
   ":                      ---- PRESS ENTER TO CONTINUE ----                   :"
   "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    GOTO SHOW11
  ENDCASE
CASE SHOW12
*******************************************************************************
*  CASE SHOW12 DISPLAYS THE VALUES IN THE GROWTH RATE VS DELTA-K TABLES.      *
*   WHEN COMPLETED THE PROGRAM BRANCHES TO DISPLAY THE NEXT SET OF FATIGUE    *
*   PROPERTIES.  (CASE SHOW10).                                               *
*******************************************************************************
  NEXT DA_DN
    ON NONEXT GOTO SHOW10
    ON NEXT CRTFORM LINE 1
   "IMMMMMMMMMMMMMMMMMMM GROWTH RATE VS DELTA-K TABLE MMMMMMMMMMMMMMMMMMMMMMMM;"
   ":                                                                         : "
   ":                     IMMMMMMMMMKMMMMMMMMMMMMMMMKMMMMMMMMMM;              :"
   ":                     :  GROWTH  :     GROWTH     :  DELTA-K  :           :"
   ":                     :   RATE   :    EXPONENT    :           :           :"
   ":                     HMMMMMMMMMJMMMMMMMMMMMMMMMJMMMMMMMMMM<              :"
   ":<22 <D.GROWTH_RATE <37 <D.POWER <50 <D.DELTA_K  <71 :"
   ":                                                                         :"
   ":                      ---- PRESS ENTER TO CONTINUE ----                  :"
   "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   GOTO SHOW12
  ENDCASE
*******************************************************************************
* CASE SHOW13 DISPLAYS THE STRESS CORROSION PROPERTIES.WHEN COMPLETED THE     *
*  PROGRAM BRANCHES TO DISPLAY THE TOUGHNESS (CHARPY) PROPERTIES. (CASE       *
*   SHOW16).                                                                  *
*******************************************************************************
CASE SHOW13
  NEXT SCC_TEMP
    ON NONEXT GOTO SHOW16
    ON NEXT CRTFORM LINE 1
 "IMMMMMMMMMMMMMMMMMMMM STRESS CORROSION PROPERTIES MMMMMMMMMMMMMMMMMMMMMMMMM;"
 ":                                                                          : "
 ":                                                  ZIRC ONLY               :"
 ":   ENVIRONMENT <D.SCC_ENVI   <45 HCC  <D.SCC_HCC                     :"
 ":   FREE POTENTIAL (MV) <D.FREE_POT  <45 (H) (MG/KG) <D.SCC_H_CON   <76 :"
 ":   TEST POTENTIAL (MV) <D.TEST_P                           <76 :"
 ":   KISCC MPA(M)1/2  <D.KISCC     <45 K1H MPA(M)1/2 <D.K1H <76 :"
 ":   TEMPERATURE (CELSIUS)  <D.SCC_TEMP                         <76 :"
 ":   VELOCITY IN K INDEPENDENT RANGE (M/S) <D.VELOCI EE <D.VELOC_EX  <76 :"
 ":   THERMAL HISTORY:                                                      :"
 ":   <2 <D.THIST <76 :"
 ":   IRRADIATION HISTORY:                                                  :"
 ":  <2  <D.IHIST <76 :"
 ":   REFERENCE <D.SCC_REF1 <76 :"
 ":      (CONT) <D.SCC_REF2 <76 :"
 ":                                                                          : "
 ":                          C - TO VIEW CHILD   IMMMMM;                     :"
 ":                          X - TO EXIT         : <ACTION  :         <75  :"
 ":                                              HMMMMM<                     :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   ON NEXT IF ACTION IS 'X' THEN GOTO EXIT
            ELSE GOTO SHOW14;
 ENDCASE
```

```
************************************************************************
* CASE SHOW14 DISPLAYS THE VALUES IN THE CRACK LENGTH VS TIME TABLE. WHEN *
*   THE TABLE HAS BEEN DISPLAYED THE PROGRAM BRANCHES TO DISPLAY THE      *
*   CRACK SPEED VS DELTA-K TABLE. (CASE SHOW15).                          *
************************************************************************
CASE SHOW14
  NEXT CRACK_LENGTH
    ON NONEXT GOTO SHOW15
    ON NEXT CRTFORM LINE 1
   "IMMMMMMMMMMMMMMMMMMM CRACK LENGTH VS TIME TABLE MMMMMMMMMMMMMMMMMMM;"
   ":                                                                  : "
   ":                    IMMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMMM;            :"
   ":                    :  CRACK LENGTH  :     TIME        :            :"
   ":                    :     (MM)       :     (SEC)       :            :"
   ":                    HMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMMM<            :"
   ": <24  <D.A_VALUE  <39  <D.T_VALUE <71 :"
   ":                                                                   :"
   ":                    —— PRESS ENTER TO CONTINUE ——                  :"
   "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   GOTO SHOW14
  ENDCASE
************************************************************************
* CASE SHOW15 DISPLAYS THE CRACK SPEED VS DELTA-K TABLE, AND THEN BRANCHES *
*  BACK TO DISPLAY THE NEXT SET OF STRESS CORROSION PROPERTIES. (CASE     *
*  SHOW13).                                                               *
************************************************************************
CASE SHOW15
  NEXT DA_DT
    ON NONEXT GOTO SHOW13
    ON NEXT CRTFORM  LINE 1
   "IMMMMMMMMMMMMMMMMMM  CRACK SPEED VS DELTA-K TABLE MMMMMMMMMMMMMMMMMMM;"
   ":                                                                  : "
   ":                  IMMMMMMMMMMKMMMMMMMMMMMMMMMMKMMMMMMMMMMM;        :"
   ":                  :  CRACK    :      SPEED      :   SCC     :        :"
   ":                  :  SPEED    :    EXPONENT     :  DELTA-K  :        :"
   ":                  HMMMMMMMMMMJMMMMMMMMMMMMMMMMJMMMMMMMMMMM<        :"
   ": <22 <D.CRACK_SPEED <37 <D.SPEED_EXPON <50 <D.SCC_DELTA_K <70  :"
   ":                                                                   :"
   ":                   —— PRESS ENTER TO CONTINUE ——                   :"
   "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    GOTO SHOW15
  ENDCASE
*************************************************************************
* CASE SHOW16 DISPLAYS THE TOUGHNESS PROPERTIES. THEN THE PROGRAM BRANCHES TO *
*   DISPLAY THE THERMAL,ELECTRICAL AND MAGNETIC PROPERTIES. (CASE SHOW18).    *
*************************************************************************
CASE SHOW16
  NEXT TOUGH_STRESS
  ON NONEXT GOTO SHOW18
  ON NEXT CRTFORM LINE 1
 "IMMMMMMMMMMMMMMMMMM TOUGHNESS (CHARPY) PROPERTIES MMMMMMMMMMMMMMMMMMM;"
 ":                                                                  : "
 ": YIELD STRESS (MPA) <D.TYS                                        :"
 ": IRRADIATION:  <D.MANTISS  EE <D.EXPONENT  <71 :"
 ": FLUENCE <D.FLUENCE                                             :"
 ": N.D.T. (CELSIUS) <D.NDT                                          :"
 ": FATT (CELSIUS) <D.FATT                                           :"
 ": REF: <D.TOUGH_REF1 <71 :"
 ":      <D.TOUGH_REF2  <71 :"
 ":                                                                      :  "
 ":                          C - TO VIEW CHILD   IMMMMM;                 :"
 ":                          X - TO EXIT         :<ACTION   :                 :"
 ":                                              HMMMMM<                 :"
 ":                                                                      :"
 "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    ON NEXT IF ACTION IS 'X' THEN GOTO EXIT
           ELSE GOTO SHOW17;
  ENDCASE
 ******************************************************************************
 * CASE SHOW17 DISPLAYS THE TEMPERATURE -C.V.N TABLE AND BRANCHES TO          *
 *   DISPLAY THE NEXT SET OF CHARPY PROPERTIES.(CASE SHOW16)                  *
 ******************************************************************************
CASE SHOW17
  NEXT CHARPY_TEMP
    ON NONEXT GOTO SHOW16
    ON NEXT CRTFORM LINE 1
 "IMMMMMMMMMMMMMMMMMMMM STRESS CORROSION PROPERTIES MMMMMMMMMMMMMMMMMMMMMM;"
 ":                                                                         : "
 ":      IMMMMMMMMMKMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMKMMMMMMMMM;    :"
 ":      :  CHARPY  :                C.V.N (JOULES)               :  MILLS  :    :"
 ":      :   TEMP   :    (1)       (2)        (3)       (4)       : LAT EXP :    :"
 ":      HMMMMMMMMMJMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMJMMMMMMMMM<    :"
 ": <7 <D.CH_TEMP <22 <D.CVN1 <32 <D.CVN2 <42 <D.CVN3 <51 <D.CVN4 <64 <D.MLS
     <73     :"
 ":                                                                         : "
 ":                    ----- PRESS ENTER TO CONTINUE -----                  : "
 "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  GOTO SHOW17
ENDCASE
******************************************************************************
*  CASE SHOW18 DISPLAYS THE THERAML,ELECTRICAL AND MAGNETIC PROPERTIES        *
*    AND WHEN COMPLETE THE PROGRAM BRANCHES BACK TO DISPLAY THE PROPERTIES   *
*    FOR THE NEXT ALLOY.(TOP CASE).                                           *
******************************************************************************
 CASE SHOW18
   NEXT ER
   ON NONEXT GOTO TOP
   ON NEXT CRTFORM LINE 1
 "IMMMMMMMMMMMM THERMAL , ELECTRICAL AND MAGNETIC PROPERTIES MMMMMMMMMM;"
 ":                                                                    : "
 ":      ELECTRIC RES: <27 <D.ER                             :"
 ":      SLOPE OF ER: <27 <D.SLOPE   <71 :"
 ":      VARIATION IN ER: <27 <D.ER_VAR <71 :"
 ":      CURIE TEMP(CELSIUS): <27 <D.CT    <71 :"
 ":      FIELD STRENGTH: <27 <D.CRITICAL_FS  <71 :"
 ": REF:<D.NDE_REF1  <71 :"
 ":      <D.NDE_REF2   <71 :"
 ":                                                                    :  "
 ":                          C - TO VIEW CHILD   IMMMMM;               :"
 ":                          X - TO EXIT         :<ACTION   :               :"
 ":                                              HMMMMM<               :"
 ":                                                                    :"
 "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    ON NEXT IF ACTION IS 'X' THEN GOTO EXIT
           ELSE GOTO SHOW19;
  ENDCASE
 ******************************************************************************
 * CASE SHOW19 DISPLAYS THE MAGNETIC PERMEABILITY VS FIELD STRENGTH TABLE     *
 *    AND THE BRANCHES TO DISPLAY THE CONDUCTIVITY TABLE.(CASE SHOW20).       *
 ******************************************************************************
 CASE SHOW19
NEXT PERM
 ON NONEXT GOTO SHOW20
  ON NEXT CRTFORM LINE 1
   "IMMMMMMMMMMMMMMMM MAGNETIC PERMEABILITY VS FIELD STRENGTH MMMMMMMMMMM;"
   ":                                                                     :"
   ":                    IMMMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMMM;              :"
   ":                    :   MAGNETIC     :      FIELD      :              :"
   ":                    : PERMEABILITY   :     STRENGTH    :              :"
   ":                    HMMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMMM<              :"
   ": <24  <D.PERM  <42  <D.FS   <71 :"
   ":                                                                     :"
   ":                 —— PRESS ENTER TO CONTINUE ——                       :"
   "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    GOTO SHOW19
  ENDCASE
 ******************************************************************************
 *  CASE SHOW20 DISPLAYS THE CONDUCTIVITY TABLE, AND THEN BRANCHES BACK TO   *
 *     DISPLAY THE NEXT T.E.M PROPERTIES . (CASE SHOW18).                    *
 ******************************************************************************
 CASE SHOW20
  NEXT NDE_TEMP
  ON NONEXT GOTO SHOW18
  ON NEXT CRTFORM LINE 1
   "IMMMMMMMMMMMMMMMMMMMMMMMM CONDUCTIVITY TABLE MMMMMMMMMMMMMMMMMMMMMMM;"
   ":                                                                    : "
   ":               IMMMMMMMMMMMMMMKMMMMMMMMMMMMMMKMMMMMMMMMMMMMMM;       :"
   ":               : TEMPERATURE :  EXPANSION   : CONDUCTIVITY :       :"
   ":               :  (CELSIUS)  : COEFFICIENT  :              :       :"
   ":               HMMMMMMMMMMMMMMJMMMMMMMMMMMMMMJMMMMMMMMMMMMMMM<       :"
   ": <21 <D.NDE_TEMP <34 <D.EXPAN_COEFF <48 <D.CONDUCTIV <71 :"
   ":                                                                    :"
   ":                 —— PRESS ENTER TO CONTINUE ——                      :"
   "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    GOTO SHOW20
  ENDCASE
DATA VIA FIDEL
END
```

```
********************************************************************************
*                                                                              *
*                              MBACKUP.FEX                                     *
*                                                                              *
********************************************************************************
* THIS PROGRAM PERFORMS A BACKUP OF THE METALS DATABASE . THE PURPOSE OF A     *
*   BACKUP IS TO PROVIDE DATA SECURITY WHILE MAINTAINING DATA INTEGRITY.       *
********************************************************************************
*                                                                              *
*                      PROGRAM WRITTEN BY JAMES LIZOTTE                        *
*                                JUNE 1986                                     *
*                                                                              *
********************************************************************************
-BACK
-SET &ACTION=' ';
-CRTFORM LINE 1
-"    IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-"    :                                                              : "
-"    :                 WELCOME TO THE  BACKUP PROCEDURE             :"
-"    :                     FOR THE METALS DATABASE.                 :"
-"    :                                                              : "
-"    :               PLEASE INSERT BACKUP DISK INTO DRIVE A:        :"
-"    :                                                              : "
-"    :                  ENTER - B - TO CONTINUE BACKUP PROCEDURE    :"
-"    :                  ENTER - X - TO EXIT TO MAINMENU             :"
-"    :                                                              :"
-"    :                     ENTER OPTION: <&ACTION     <73 :"
-"    :                                                              :"
-"    HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-IF &ACTION EQ 'X' THEN GOTO EXIT;
-IF &ACTION NE 'B' THEN GOTO BACK;
DOS COPY METALS.MAS  A:
DOS COPY METALS.FOC  A:
DOS COPY RAWFILE1.FOC A:
DOS COPY RAWFILE2.FOC A:
DOS COPY NDEFILE.FOC A:
DOS COPY JVSDA.FOC A:
-EXIT
END
```

```
*******************************************************************************
*                                                                             *
*                                MRECOVER.FEX                                 *
*                                                                             *
*******************************************************************************
* THIS PROGRAM LOADS THE DATABASE INTO THE PC FROM A BACKUP DISKETTE. THIS    *
*  ROUTINE IS PROVIDED AS A PRECAUTION IN CASE OF ACCIDENTAL LOSS OF THE      *
*  DATABASE.                                                                  *
*******************************************************************************
*                                                                             *
*                       PROGRAM WRITTEN BY JAMES LIZOTTE                      *
*                                  JUNE 1986                                  *
*                                                                             *
*******************************************************************************
-RECOVER
-SET &ACTION=' ';
-CRTFORM LINE 1
-"     IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-"     :                                                                  : "
-"     :                 WELCOME TO THE RECOVERY PROCEDURE                :"
-"     :                     FOR THE METALS DATABASE.                     :"
-"     :                                                                  :"
-"     :      THIS ROUTINE ENABLES THE RECOVERY OF THE LATEST BACKUP      :"
-"     :        COPY OF THE METALS DATABASE STORED ON A FLOPPY DISK.      :"
-"     :                                                                  : "
-"     :              PLEASE INSERT BACKUP DISK INTO DRIVE A:             :"
-"     :                                                                  : "
-"     :                ENTER -R- TO CONTINUE RECOVERY PROCEDURE          :"
-"     :                ENTER -X- TO EXIT TO MAINMENU                     :"
-"     :                                                                  :"
-"     :                    ENTER CHOICE<&ACTION  <73 :"
-"     :                                                                  :"
-"     HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-IF &ACTION EQ 'X' THEN GOTO EXIT;
-IF &ACTION NE 'R' THEN GOTO RECOVER;
DOS COPY A:METALS.MAS  C:METALS.MAS
DOS COPY A:METALS.FOC  C:METALS.FOC
DOS COPY A:RAWFILE1.FOC C:RAWFILE1.FOC
DOS COPY A:RAWFILE2.FOC C:RAWFILE2.FOC
DOS COPY A:NDEFILE.FOC C:NDEFILE.FOC
DOS COPY A:JVSDA.FOC C:JVSDA.FOC
-EXIT
END
```

```
-**************************************************************************
-*                                                                        *
-*                             METTAB.FEX                                 *
-*                                                                        *
-**************************************************************************
-* THIS ROUTINE ALLOWS A USER TO EXECUTE A RETRIEVAL REQUEST USING  FOCUS' *
-*  QUERY LANGUAGE PRIMER.  THE REQUEST CAN BE EXECUTED ON THE SCREEN      *
-*  THEN CHANGED AND RE-EXECUTED UNTIL THE DESIRED FORM IS OBTAINED. THEN  *
-* A HARDCOPY CAN BE PRINTED BY TYPING 'Y' FOR THE HARDCOPY PROMPT.        *
-**************************************************************************
-*                                                                        *
-*                     PROGRAM UPDATED BY JAMES LIZOTTE                   *
-*                             JUNE 1986                                  *
-*                                                                        *
-**************************************************************************
-SET &LINE1 = 'TABLE FILE METALS                                      ';
-SET &LINE2 = '     HEADING CENTER                                    ';
-SET &LINE3 = '     " METALS DATABASE"                                ';
-SET &LINE4 = '     " SAMPLE REPORT "                                 ';
-SET &LINE5 = '     " "                                               ';
-SET &LINE6 = '     PRINT JJ DA                                       ';
-SET &LINE7 = '           DATE                                        ';
-SET &LINE8 = '     BY ALLOY                                          ';
-SET &LINE9 = '                                                       ';
-SET &LINE10= '     ON ALLOY  SKIP-LINE            UNDER-LINE         ';
-SET &LINE11= '     END                                               ';
-BEGINNING
-SET &YN = ' ';
-SET &HARD = ' ';
-CRTFORM
-"         FOCUS RETRIEVAL MODIFY SCREEN  - PUT X HERE TO EXIT :<&YN"
-"  IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-"  : <T.&LINE1  <72 :"
-"  : <T.&LINE2  <72 :"
-"  : <T.&LINE3  <72 :"
-"  : <T.&LINE4  <72 :"
-"  : <T.&LINE5  <72 :"
-"  : <T.&LINE6  <72 :"
-"  : <T.&LINE7  <72 :"
-"  : <T.&LINE8  <72 :"
-"  : <T.&LINE9  <72 :"
-"  : <T.&LINE10 <72 :"
-"  : <T.&LINE11 <72 :"
-"  HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-"                          INSTRUCTIONS:                                "
-"   USE THE TAB KEY AND CURSOR CONTROL KEYS TO MOVE AROUND THE ABOVE FIELDS "
-"    MAKING CHANGES AS DESIRED. WHEN ALL THE DESIRED CHANGES ARE COMPLETE,  "
-"    PRESS ENTER TO EXECUTE YOUR REQUEST. ---- NOTE THIS IS AN ITERATIVE    "
-"    ROUTINE, YOU CAN RE-EDIT THE SCREEN REPEATEDLY UNTIL THE DESIRED"
-"    RESULTS ARE OBTAINED, THEN A HARDCOPY CAN BE OBTAINED.          "
-IF &YN IS 'X' THEN GOTO EXIT;
SET PANEL=80, WIDTH=80
&LINE1
&LINE2
&LINE3
&LINE4
&LINE5
&LINE6
```

```
&LINE7
&LINE8
&LINE9
&LINE10
&LINE11
-RUN
-CRTFORM
-"  IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-"  :                                               :"
-"  :   DO YOU WANT A HARD COPY?  Y/N ====><&YN      :"
-"  :                                               :"
-"  :   Y - WILL PRINT THE REPORT JUST EXECUTED.     :"
-"  :   N - WILL ALLOW FURTHER EDITTING OF THE REPORT :"
-"  :                                               :"
-"  HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-IF &YN IS-NOT 'Y' THEN GOTO BEGINNING;
***************************************************************************
*  FOR PRINTER TO PRINT WIDE REPORTS (130) YOU MUST ISSUE THE FOLLOWING    *
*   DOS COMMAND BEFORE ENTERING PC/FOCUS ===>'MODE LPT1:132 A:' WITH DOS   *
*   DISK IN DRIVE A:                                                       *
***************************************************************************
OFFLINE
SET WIDTH=130, PANEL=80, COLOR=OFF
&LINE1
&LINE2
&LINE3
&LINE4
&LINE5
&LINE6
&LINE7
&LINE8
&LINE9
&LINE10
&LINE11
OFFLINE CLOSE
ONLINE
SET PANEL=80, COLOR=ON
-RUN
-GOTO BEGINNING
-EXIT
```

```
*******************************************************************
*                                                                 *
*                          STREN.FEX                              *
*                                                                 *
*******************************************************************
*   THIS ROUTINE MATCHES AND UPDATES STRENGTH PROPERTIES ONLY     *
*    USED BY CONTROL FOCEXEC,OR OPTION 3 IN MENU FOCEXEC.         *
*    GLOBAL VARIABLES   ARE PASSED TO THIS                        *
*    ROUTINE FROM THE CONTROL FOCEXEC 'CONTROL'.                  *
*******************************************************************
*                                                                 *
*              PROGRAM UPDATED BY JAMES LIZOTTE                   *
*                       MAY 1986                                  *
*                                                                 *
*******************************************************************
MODIFY FILE METALS
 COMPUTE
 NAME='&&NAME';
 ID='&&ID';
 ACTION/A3=;
 MATCH NAME  ID
  ON NOMATCH GOTO TOP
  ON MATCH  CRTFORM LINE 1
  " </4"
  " IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  " :                                                              : "
  " :                                                              :"
  " :                                                              : "
  " :                                                              :"
  " :            YOU HAVE ENTERED THE ROUTINE NAMED STREN!          : "
  " :                                                              : "
  " :        THIS ROUTINE WILL ALLOW YOU TO ENTER STRENGTH PROPERTIES :"
  " :     FOR ALLOY: <D.NAME  ALLOY ID:<D.ID :"
  " :                                                              : "
  " :      ENTER C TO CONTINUE                                     :  "
  " :      ENTER END TO QUIT THIS ROUTINE   <ACTION                  : "
  " :                                                              :"
  " HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  IF ACTION NE 'C'  THEN GOTO TOP ELSE GOTO SCRONE;
  CASE SCRONE
 COMPUTE
   NEXT_TABLE=D.NEXT_TABLE;
  CRTFORM LINE 1
     "          IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
     "          :               INSTRUCTIONS                  :"
     "          :  END-ENTERED IN ANY FIELD WILL END ROUTINE   :"
     "          :  TAB-WILL MOVE CURSOR FROM FIELD TO FIELD    :"
     "          :        PRESS RETURN WHEN ALL FIELDS FILLED   :"
     "          HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  "            ENTER ALL DATA TO MATCH OR UPDATE PROMPTED FIELDS"
  " "
  " "
  "          THE NUMBER FOR THE NEXT FREE TABLE IS: <D.NEXT_TABLE>"
  " "
  "          ENTER THE TABLE NUMBER OF NEW TABLE OR TABLE TO BE UPDATED"
  "          TABLE NO: <TABLE_NO>"
 MATCH TABLE_NO
   ON NOMATCH GOTO INCLUDE1
```

```
    ON MATCH CRTFORM  LINE 1
     "          IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
     "          :                   INSTRUCTIONS                  :"
     "          :   END-ENTERED IN ANY FIELD WILL END ROUTINE     :"
     "          :   TAB-WILL MOVE CURSOR FROM FIELD TO FIELD      :"
     "          :        PRESS RETURN WHEN ALL FIELDS FILLED      :"
     "          HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
     " "
     "           DISPLAYING STRAIN RATE: <T.SR"
    "            AND REFERENCE"
    "        <T.REF1A"
    "        <T.REF1B"
   ON MATCH UPDATE SR REF1A REF1B
   GOTO TABLE
  ENDCASE
****************************************************************************
*   CASE TABLE IS EXECUTED WHWN TABLE NUMBER PREVIOUSLY ENTERED MATCHED      *
*   ONE ALREADY IN THE DATABASE. HERE THE ROUTINE EITHER UPDATES OR          *
*   INCLUDES ROWS OF THE STRENGTH PROPERTY TABLE, DEPENDING UPON THE         *
*   MATCHING OF THE TEMPERATURE FIELD.                                       *
****************************************************************************
CASE TABLE
CRTFORM LINE 1
     "          IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
     "          :                   INSTRUCTIONS                  :"
     "          :   END-ENTERED IN ANY FIELD WILL END ROUTINE     :"
     "          :   TAB-WILL MOVE CURSOR FROM FIELD TO FIELD      :"
     "          :        PRESS RETURN WHEN ALL FIELDS FILLED      :"
     "          HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
     " "
  "                 ENTER STRENGTH TABLE TEMPERATURE"
  "                 TEMP: <STR_TEMP"
  " "
  "</5"
  "                                  ENTER OPTION HERE"
  "      C - TO CONTINUE               IMMMMMMM;    "
  "      X - TO EXIT ROUTINE           :<ACTION   :    "
  "      S - TO RESTART ROUTINE        HMMMMMMM< "
 IF ACTION IS 'X' GOTO EXIT;
 IF ACTION IS 'S'  GOTO TOP ELSE GOTO OLDROW;
 ENDCASE
 CASE OLDROW
  COMPUTE
    TABLE_NUM=TABLE_NUM;
    STR_TEMP=STR_TEMP;
   MATCH TABLE_NUM
    ON MATCH CONTINUE TO STR_TEMP
*****************************************************************
* ON NOMATCH CASE INCLUDE2 WILL ENTER A NEW ROW                   *
* ON MATCH THIS CASE WILL UPDATE ANY FIELDS IN THE ROW MATCHED    *
*****************************************************************
 ON NOMATCH CRTFORM LINE 1
    "          IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
    "          :                   INSTRUCTIONS                  :"
    "          :   END-ENTERED IN ANY FIELD WILL END ROUTINE     :"
    "          :   TAB-WILL MOVE CURSOR FROM FIELD TO FIELD      :"
    "          :        PRESS RETURN WHEN ALL FIELDS FILLED      :"
    "          HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    " "
    "                   ROW IS NOT IN STRENGTH TABLE"
  " "
  "                             ENTER OPTION HERE"
  "                     A - TO ADD A NEW ROW        IMMMMMMM;    "
  "                     X - TO EXIT ROUTINE         :<ACTION   :    "
  "                     S - TO RESTART ROUTINE      HMMMMMMM< "
  ON NOMATCH  IF ACTION IS 'X'  GOTO EXIT ELSE
                     IF ACTION IS 'S' GOTO TOP ELSE GOTO INCLUDE2;
 ON MATCH CRTFORM LINE 1
   "          IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   "          :                 INSTRUCTIONS                    :"
   "          :   END-ENTERED IN ANY FIELD WILL END ROUTINE     :"
   "          :   TAB-WILL MOVE CURSOR FROM FIELD TO FIELD      :"
   "          :       PRESS RETURN WHEN ALL FIELDS FILLED       :"
   "          HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  " "
 "                 ROW IN STRENGTH TABLE FOUND"
 "                 CHECK AND MAKE CHANGES IF DESIRED"
 "  "
 " <48 REDUCTION <60 YOUNG'S"
 "TEMPERATURE  YIELD STRESS   UTS   ELONGATION     IN AREA    MODULUS"
 " (CELSIUS)      (MPA)      (MPA)      %              %        (MPA)"
 " MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM"
 "  <D.S_TEMP <17  <T.YS <27 <T.UTS <38 <T.ELONG <50 <T.RA
  <61 <T.YM_MAN EE <T.YM_EXP"
 ON MATCH IF ELONG IS-NOT PRESENT AND RA IS-NOT PRESENT
         THEN GOTO TABLE;
 ON MATCH UPDATE YS UTS ELONG RA YM_MA YM_EX
 GOTO TABLE
ENDCASE
*************************************************************************
*  THIS CASE IS EXECUTED WHEN THE ENTERED VALUE FOR THE TABLE_NO DOES NOT *
*  MATCH ONE ALREADY IN THE DATABASE. (HENCE IT ENTERS A NEW SEGMENT     *
*  AND CHILD SEGMENT.                                                     *
*************************************************************************
CASE INCLUDE1
  COMPUTE
    TABLE_NO=TABLE_NO;
    NEXT_TABLE=NEXT_TABLE;
  COMPUTE
    NAME=NAME;
  MATCH NAME
    ON MATCH COMPUTE
        NEXT_TABLE=MAX(TABLE_NUM,NEXT_TABLE)+1;
    ON MATCH UPDATE NEXT_TABLE
    ON MATCH CONTINUE TO TABLE_NO
  CRTFORM LINE 1
   "          IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   "          :                 INSTRUCTIONS                    :"
   "          :   END-ENTERED IN ANY FIELD WILL END ROUTINE     :"
   "          :   TAB-WILL MOVE CURSOR FROM FIELD TO FIELD      :"
   "          :       PRESS RETURN WHEN ALL FIELDS FILLED       :"
   "          HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   " "
   "             TABLE NOT FOUND ,     -ENTERING NEW SEGMENT!"
  "</2"
   "             REFERENCE "
   "          <REF1A"
   "          <REF1B"
   "             STRAIN RATE: <SR"
   "   "
 "                                          ENTER OPTION HERE"
 "            C - TO_CONTINUE                 IMMMMMMM;    "
 "            X - TO EXIT ROUTINE             :<ACTION   :    "
 "            S - TO RESTART ROUTINE          HMMMMMMMM< "
IF ACTION IS 'X' GOTO  EXIT;
IF ACTION IS 'S' GOTO TOP;
   ON NOMATCH INCLUDE
    GOTO INCLUDE2
ENDCASE
*******************************************************************************
*  CASE INCLUDE2 IS EXECUTED WHEN EITHER ENTERING A NEW SEGMENT              *
*   AND THUS ENTERING A NEW STRENGTH TABLE, OR WHEN THE PARENT SEGMENT       *
*   MATCHED WITH ONE ALREADY IN THE DATABASE , AND WE ARE ADDING A ROW       *
*   TO  THE STRENGTH TABLE                                                    *
*******************************************************************************
CASE INCLUDE2
  COMPUTE
     TABLE_NUM=TABLE_NUM;
   MATCH TABLE_NUM
     ON MATCH  CRTFORM LINE 1
   "          IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   "          :                INSTRUCTIONS                  :"
   "          :   END-ENTERED IN ANY FIELD WILL END ROUTINE   :"
   "          :   TAB-WILL MOVE CURSOR FROM FIELD TO FIELD    :"
   "          :        PRESS RETURN WHEN ALL FIELDS FILLED    :"
   "          HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
     "   "
     "          ENTER STRENGTH PROPERTIES FOR CHOSEN TEMPERATURE"
     "  "
     "          <48 REDUCTION <60 YOUNG'S"
     " TEMPERATURE  YIELD STRESS   UTS   ELONGATION   IN AREA    MODULUS"
     "  (CELSIUS)       (MPA)       (MPA)       %             %          (MPA)"
     "MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM"
     "   <S_TEMP <19 <YS <27 <UTS <38 <ELONG <50 <RA <60 <YM_MAN EE <YM_EXP"
    MATCH STR_TEMP
     ON NOMATCH INCLUDE
     GOTO TABLE
   ENDCASE
  DATA VIA FIDEL
  END
```

```
*******************************************************************
*                                                                  *
*                             LEFM.FEX                             *
*                                                                  *
********************************************************************
* THIS=ROUTINE IS EXECUTED THROUGH THE 'CONTROL' ROUTINE. THE ROUTINE    *
*  PERFORMS ANY ADDING OR UPDATING OF THE LEFM PROPERTY SEGMENT OF THE    *
*  METALS DATABASE. FOR THE REMAINING ADD/UPDATE ROUTINES, SEE THE EXEC   *
*  'CONTROL'. THE GLOBAL VARIABLES ARE PASSED TO THIS ROUTINE FROM 'CONTROL. *
********************************************************************
*                                                                  *
*                  PROGRAM UPDATED BY JAMES LIZOTTE                *
*                              MAY 1986                            *
*                                                                  *
********************************************************************
MODIFY FILE METALS
COMPUTE
 ACTION/A1=;
 NAME='&&NAME';
 ID='&&ID';
 MATCH NAME ID
  ON NOMATCH CRTFORM LINE 1
   "</5"
   " ERROR IN MATCHING NAME - EXITING ROUTINE."
  ON NOMATCH GOTO EXIT
  ON MATCH GOTO INLTEST
 CASE INLTEST
  CRTFORM LINE 1
  "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  "                 :                INSTRUCTIONS             :"
  "                 :                                         :"
  "                 :  TAB KEY- TO MOVE AROUND FIELDS         :"
  "                 :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
  "                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  " </3"
  "                  ENTER YIELD STRESS FOR LEFM PROPERTIES"
  "                  <LTEST_STRESS"
  "</2"
  "                      C - TO CONTINUE      IMMMMMM;    "
  "                      X - TO EXIT          :<ACTION   :  "
  "                      S - TO RESTART       HMMMMMM<"
  IF ACTION IS 'X' GOTO EXIT;
  IF ACTION IS 'S' GOTO TOP;
  *******************************************************************
  *  IF LTEST_STRESS MATCHES, THEN THE ROUTINE DISPLAYS THE SEGMENT THAT   *
  *  WAS MATCHED. AND ALLOWS ANY UPDATES. OTHERWISE, THE PROGRAM BRANCHES  *
  *  TO CASE INCLUDE1. TO ENTER A NEW SET OF LEFM PROPERTIES.              *
  *******************************************************************
  MATCH LTEST_STRESS
   ON NOMATCH INCLUDE
   ON NOMATCH GOTO INCLUDE1
   ON MATCH CRTFORM LINE 1
  "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  "                 :                INSTRUCTIONS             :"
  "                 :                                         :"
  "                 :  TAB KEY- TO MOVE AROUND FIELDS         :"
  "                 :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
  "                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
" "
  "        YIELD STRESS MATCHES A SET OF VALUES ALREADY IN TABLE"
  "        - MAKE DESIRED CHANGES AND ENTER TO CONTINUE"
  " </1"
  "    <48 ZIRC ONLY"
  "    YIELD STRESS (MPA)  <30 <D.LESTRESS> <46 HCC <T.LE_HCC"
  "    LOADING RATE (KN/S) <30  <T.LERATE <46 (H) (MG/KG) <T.LE_H_CON"
  "    ORIENTATION: <30 <T.LE_ORIENT"
  "    REFERENCE: <T.LE_REF1"
  "    REFERENCE: <T.LE_REF2"
  "    HARDNESS  <30 <T.HARD1 <46 HARDNESS SCALE <T.SCALE1"
  "    ASTM GRAIN SIZE  <30 <T.GRAIN1"
  ON MATCH
   UPDATE LE_HC LERATE LE_H_CON LE_ORIENT LE_REF1 LE_REF2
   UPDATE HARD1 SCALE1 GRAIN1
  ON MATCH GOTO TABLE
 ENDCASE
 CASE TABLE
****************************************************************
* THIS CASE EITHER UPDATES THE DATA FOR THE CURRENT SET OF LEFM   *
* PROPERTIES MATCHED BY LTEST_STRESS, OR IT INCLUDES A NEW ROW    *
* BY BRANCHING TO CASE INCLUDE2                                   *
****************************************************************
 CRTFORM LINE 1
 "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                :                INSTRUCTIONS             :"
 "                :                                         :"
 "                :  TAB KEY- TO MOVE AROUND FIELDS         :"
 "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  " "
  "              ENTER TEMPERATURE AT WHICH K1C AND K1A MEASURED"
  "               <LEFM_TEMP"
 "</2"
 "                           C - TO CONTINUE     IMMMMM;   "
 "                           X - TO EXIT         :<ACTION  :  "
 "                           S - TO RESTART      HMMMMM<"
  IF ACTION IS 'X' GOTO EXIT;
  IF ACTION IS 'S' GOTO TOP;
  MATCH LEFM_TEMP
   ON NOMATCH GOTO INCLUDE2
   ON MATCH CRTFORM LINE 1
 "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                :                INSTRUCTIONS             :"
 "                :                                         :"
 "                :  TAB KEY- TO MOVE AROUND FIELDS         :"
 "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 " "
  "                       ROW IN K1C TABLE FOUND"
  "                    CHECK AND MAKE DESIRED CHANGES"
  "                IMMMMMMMMMMMMMKMMMMMMMMMMMKMMMMMMMMMMMM;"
  "                :  TEMPERATURE :    K1C    :    K1A     :"
  "                :    (CELSIUS) : MPA(M)1/2 : MPA(M)1/2  :"
  "                HMMMMMMMMMMMMMJMMMMMMMMMMMJMMMMMMMMMMMM<"
  "<21 <D.LEFM_TEMP <36 <T.K1C <47 <T.K1A"
  ON MATCH UPDATE K1C K1A
   GOTO TABLE
```

```
ENDCASE
*******************************************************************
* THIS CASE IS EXECUTED WHEN THE YIELD STRESS ENTERED IN THE TOP  *
* CASE DID NOT MATCH ANY IN THE DATABASE. THEREFORE THE PROGRAM   *
* ENTERS A NEW SET OF LEFM PROPERTIES.                            *
*******************************************************************
CASE INCLUDE1
 COMPUTE
  LTEST_STRESS=LTEST_STRESS;
  MATCH LTEST_STRESS
  ON MATCH CRTFORM LINE 1
  "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  "                 :                INSTRUCTIONS              :"
  "                 :                                          :"
  "                 :  TAB KEY- TO MOVE AROUND FIELDS          :"
  "                 :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
  "                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  " "
  "                     ENTER NEW SET OF LEFM PROPERTIES"
  "                          NEW YIELD STRESS . . . . ."
  "  "
  "             <48  ZIRC ONLY"
  "     YIELD STRESS (MPA): <30 <D.LESTRESS> <46 HCC: <LE_HCC"
  "     LOADING RATE (KN/S): <30 <LERATE <46 (H) (MG/KG): <LE_H_CON"
  "     ORIENTATION: <30 <LE_ORIENT"
  "     REFERENCE:<LE_REF1"
  "     REFERENCE:<LE_REF2"
  "     HARDNESS: <30 <HARD1  <46 HARDNES SCALE: <SCALE1"
   "    ASTM GRAIN SIZE: <30 <GRAIN1"
ON MATCH UPDATE LE_HC LERATE LE_H_CON LE_ORIENT LE_REF1 LE_REF2
       UPDATE HARD1 SCALE1 GRAIN1
ON MATCH GOTO TABLE
ON NOMATCH GOTO TOP
ENDCASE
CASE INCLUDE2
*********************************************************************
* CASE INCLUDE2 CONTINUES TO ADD NEW DATA TO THE DATABASE, EITHER   *
* TO THE PREVIOUSLY MATCHED LTEST_STRESS (FROM CASE TOP), OR TO     *
* THE COMPLETELY NEW SET OF LEFM PROPERTIES.(FROM CASE INCLUDE1)    *
*********************************************************************
COMPUTE
 LEFM_TEMP=LEFM_TEMP;
  CRTFORM LINE 1
 "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                 :                INSTRUCTIONS              :"
 "                 :                                          :"
 "                 :  TAB KEY- TO MOVE AROUND FIELDS          :"
 "                 :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  "  "
 "                 ENTERING NEW ROW IN TEMPERATURE VS K1C TABLE"
 "  "
  "                 IMMMMMMMMMMMMMKMMMMMMMMMMMMKMMMMMMMMMMMMM;"
  "                 :  TEMPERATURE :    K1C     :     K1A     :"
  "                 :    (CELSIUS) : MPA(M)1/2  : MPA(M)1/2   :"
  "                 HMMMMMMMMMMMMMJMMMMMMMMMMMMJMMMMMMMMMMMMM<"
  "<21 <D.LEFM_TEMP <36 <K1C <47 <K1A"
 MATCH LEFM_TEMP
```

```
ON NOMATCH INCLUDE
GOTO TABLE
ENDCASE
DATA VIA FIDEL
END
```

```
*********************************************************************
*
*
*                              EPFM.FEX
***********************************************************************
* THIS ROUTINE IS EXECUTED THROUGH THE 'CONTROL' ROUTINE. THE ROUTINE
*  PERFORMS ANY ADDING OR UPDATING OF THE EPFM PROPERTY SEGMENT OF THE
* METALS DATABASE. FOR THE REMAINING ADD/UPDATE ROUTINES, SEE THE EXEC
* 'CONTROL'. THE GLOBAL VARIABLES ARE PASSED TO THIS ROUTINE FROM 'CONTROL'.
***********************************************************************
*
*
*                    PROGRAM WRITTEN BY JAMES LIZOTTE
*                              MAY 1986
***********************************************************************
MODIFY FILE METALS
COMPUTE
 ACTION/A1=;
 NAME='&&NAME';
 ID='&&ID';
 MATCH NAME ID
  ON NOMATCH CRTFORM LINE 1
   "</5"
   " ERROR IN MATCHING NAME - EXITING ROUTINE."
  ON NOMATCH GOTO EXIT
  ON MATCH GOTO INLTEST
CASE INLTEST
 CRTFORM LINE 1
 "
 "                  IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                  :               INSTRUCTIONS            :"
 "                  :                                       :"
 "                  :  TAB KEY- TO MOVE AROUND FIELDS       :"
 "                  :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "                  HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 " </3"
 "
 "                   ENTER YIELD STRESS FOR EPFM PROPERTIES"
                     <ETEST_STRESS"
 "</2"
 "
 "                     C - TO CONTINUE      IMMMMM;    "
 "                     X - TO EXIT          :<ACTION  :  "
                       S - TO RESTART       HMMMMM<"
IF ACTION IS 'X' GOTO EXIT;
IF ACTION IS 'S' GOTO TOP;
***********************************************************************
*  IF ETEST_STRESS MATCHES, THEN THE ROUTINE DISPLAYS THE SEGMENT THAT  *
*  WAS MATCHED. AND ALLOWS ANY UPDATES. OTHERWISE, THE PROGRAM BRANCHES *
*  TO CASE INCLUDE1. TO ENTER A NEW SET OF EPFM PROPERTIES.             *
***********************************************************************
MATCH ETEST_STRESS
 ON NOMATCH INCLUDE
 ON NOMATCH GOTO INCLUDE1
 ON MATCH CRTFORM LINE 1
"
"                   IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
"                   :               INSTRUCTIONS            :"
"                   :                                       :"
"                   :  TAB KEY- TO MOVE AROUND FIELDS       :"
"                   :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
                    HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
```

```
" "
  "         YIELD STRESS MATCHES A SET OF VALUES ALREADY IN TABLE"
  "         - MAKE DESIRED CHANGES AND ENTER TO CONTINUE"
  " </1"
  "     <48 ZIRC ONLY"
  "     YIELD STRESS (MPA): <30 <D.EPSTRESS> <46 HEC: <T.EP_HCC"
  "     LOADING RATE (KN/S): <30 <T.EPRATE <46 (H) (MG/KG): <T.EP_H_CON"
  "     ORIENTATION: <30 <T.EP_ORIENT"
  "     REFERENCE:<T.EP_REF1"
  "     REFERENCE:<T.EP_REF2"
  "     HARDNESS: <30 <T.HARD2    <46  HARDNESS SCALE: <T.SCALE2"
  "     ASTM GRAIN SIZE: <30 <T.GRAIN2"
  ON MATCH
   UPDATE EP_HC EPRATE EP_H_CON EP_ORIENT EP_REF1 EP_REF2
   UPDATE HARD2 SCALE2 GRAIN2
  ON MATCH GOTO TABLE
 ENDCASE
 CASE TABLE
*******************************************************************
* THIS CASE EITHER UPDATES THE DATA FOR THE CURRENT SET OF EPFM   *
* PROPERTIES MATCHED BY ETEST_STRESS, OR IT INCLUDES A NEW ROW    *
* BY BRANCHING TO CASE INCLUDE2                                   *
*******************************************************************
 CRTFORM LINE 1
 "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                :                INSTRUCTIONS            :"
 "                :                                        :"
 "                :  TAB KEY- TO MOVE AROUND FIELDS        :"
 "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  "  "
  "                   ENTER CODE RELATED TO J1C TABLE"
  "                   <CODE"
 "</2"
 "                         C - TO CONTINUE     IMMMMM;    "
 "                         X - TO EXIT         :<ACTION   :  "
 "                         S - TO RESTART      HMMMMM<"
  IF ACTION IS 'X' GOTO EXIT;
  IF ACTION IS 'S' GOTO TOP;
  MATCH CODE
   ON NOMATCH GOTO INCLUDE2
   ON MATCH CRTFORM LINE 1
 "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                :                INSTRUCTIONS            :"
 "                :                                        :"
 "                :  TAB KEY- TO MOVE AROUND FIELDS        :"
 "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 "  "
  "                        ROW IN J1C TABLE FOUND"
  "                     CHECK AND MAKE DESIRED CHANGES"
  "                IMMMMMMMMMMMKMMMMMMMMMMMMKMMMMM.MMMM;"
  "                :    CODE      :  TEMPERATURE :    J1C    :"
  "                :              :    (CELSIUS)  : KJ/(M**2) : "
  "                HMMMMMMMMMMMJMMMMMMMMMMMMJMMMMMMMMM<"
 "<21 <D.CODE <36 <T.E_TEMP < 50 <T.J1C"
 " REF 1: <T.JREF1    "
 " REF 2: <T.JREF2 "
```

```
  ON MATCH UPDATE E_TEMP J1C JREF1 JREF2
   GOTO TABLE
 ENDCASE
 **********************************************************************
 * THIS CASE IS EXECUTED WHEN THE YIELD STRESS ENTERED IN THE TOP     *
 * CASE DID NOT MATCH ANY IN THE DATABASE. THEREFORE THE PROGRAM      *
 * ENTERS A NEW SET OF EPFM PROPERTIES.                               *
 **********************************************************************
 CASE INCLUDE1
  COMPUTE
   ETEST_STRESS=ETEST_STRESS;
   MATCH ETEST_STRESS
   ON MATCH CRTFORM LINE 1
   "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   "                :                INSTRUCTIONS              :"
   "                :                                          :"
   "                :  TAB KEY- TO MOVE AROUND FIELDS          :"
   "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
   "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   " "
   "                      ENTER NEW SET OF EPFM PROPERTIES"
   "                            NEW YIELD STRESS . . . . ."
   "  "
   "             <48  ZIRC ONLY"
   "    YIELD STRESS (MPA): <30 <D.EPSTRESS> <46 HCC: <EP_HCC"
   "    LOADING RATE (KN/S): <30 <EPRATE <46 (H) (MG/KG): <EP_H_CON"
   "    ORIENTATION: <30 <EP_ORIENT"
   "    REFERENCE:<EP_REF1"
   "    REFERENCE:<EP_REF2"
   "    HARDNESS: <30 <HARD2  <46 HARDNES SCALE: <SCALE2"
    "   ASTM GRAIN SIZE: <30 <GRAIN2"
 ON MATCH UPDATE EP_HC EPRATE EP_H_CON EP_ORIENT EP_REF1 EP_REF2
         UPDATE HARD2 SCALE2 GRAIN2
 ON MATCH GOTO TABLE
 ON NOMATCH GOTO TOP
 ENDCASE
 CASE INCLUDE2
 ************************************************************************
 * CASE INCLUDE2 CONTINUES TO ADD NEW DATA TO THE DATABASE, EITHER      *
 * TO THE PREVIOUSLY MATCHED ETEST_STRESS (FROM CASE TOP), OR TO        *
 * THE COMPLETELY NEW SET OF EPFM PROPERTIES.(FROM CASE INCLUDE1)       *
 ************************************************************************
COMPUTE
 CODE=CODE;
  CRTFORM LINE 1
 "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                 :                INSTRUCTIONS              :"
 "                 :                                          :"
 "                 :  TAB KEY- TO MOVE AROUND FIELDS          :"
 "                 :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  "  "
 "                 ENTERING NEW ROW IN TEMPERATURE VS J1C TABLE"
 "  "
  "                  IMMMMMMMMMMKMMMMMMMMMMMMMMKMMMMMMMMMMM;"
  "                  :  CODE    :  TEMPERATURE :    J1C    : "
  "                  :          :    (CELSIUS) : KJ/(M**2) :  "
  "                  HMMMMMMMMMMJMMMMMMMMMMMMMMJMMMMMMMMMMM<"
```

```
   "<21 <D.CODE <36 <E_TEMP <47 <J1C"
   " REF 1: <JREF1"
   " REF 2: <JREF2"
  MATCH CODE
  ON NOMATCH INCLUDE
  GOTO SUBTABLE
  ENDCASE
CASE SUBTABLE
  CRTFORM LINE 1
  "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  "                 :                INSTRUCTIONS           :"
  "                 :                                       :"
  "                 :  TAB KEY- TO MOVE AROUND FIELDS       :"
  "                 :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
  "                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  " "
  "          YOU CAN ENTER J VS DELTA-A OR LOAD VS DISP TABLES"
  "            BY CHOOSING THE CORRECT OPTION."
  "</2"
  "                    L - FOR LOAD VS DISP"
  "                    J - FOR J VS DELTA-A      IMMMMM;   "
  "                    X - TO EXIT               :<ACTION  :  "
  "                    S - TO RESTART            HMMMMM<"
  IF ACTION IS 'X' THEN GOTO EXIT;
  IF ACTION IS 'S' THEN GOTO TOP;
  IF ACTION IS 'J'  GOTO INCLUDE3;
  IF ACTION IS 'L'  THEN GOTO INCLUDE4
       ELSE GOTO TABLE;
  ENDCASE
  CASE INCLUDE3
   CRTFORM LINE 1
  "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  "                 :                INSTRUCTIONS            :"
  "                 :                                        :"
  "                 :  TAB KEY- TO MOVE AROUND FIELDS        :"
  "                 :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
  "                 : PF8 FOR NEXT SCREEN TO ENTER MORE VALUES :"
  "                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  " "
  "                      ENTER THE J VS DELTA-A VALUES"
   "                  IMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMM;"
   "                  :       J      :    DELTA-A     : "
   "                  :              :               :  "
   "                  HMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMM<"
   " <24  <JJ  <39  <DELTA_A"
   " <24  <JJ  <39  <DELTA_A"
   " <24  <JJ  <39  <DELTA_A"
   " <24  <JJ  <39  <DELTA_A"
   " <24  <JJ  <39  <DELTA_A"
   " <24  <JJ  <39  <DELTA_A"
   " <24  <JJ  <39  <DELTA_A"
   " <24  <JJ  <39  <DELTA_A"
   " <24  <JJ  <39  <DELTA_A"
   " <24  <JJ  <39  <DELTA_A"
  IF JJ IS-NOT PRESENT THEN GOTO SUBTABLE;
  MATCH JJ DELTA_A
   ON MATCH GOTO_DUP1
   ON NOMATCH INCLUDE
   GOTO INCLUDE3
  ENDCASE
 CASE INCLUDE4
  CRTFORM LINE 1
 "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                 :                INSTRUCTIONS              :"
 "                 :                                          :"
 "                 :  TAB KEY- TO MOVE AROUND FIELDS          :"
 "                 :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "                 : PF8 FOR NEXT SCREEN TO ENTER MORE VALUES :"
 "                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 " "
 "                          ENTER LOAD VS DISP VALUES"
  "                  IMMMMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMMM;"
  "                  :      LOAD        :       DISP       : "
  "                  :                  :                  :  "
  "                  HMMMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMMM<"
 " <24 <LOAD <41 <DISP"
 " <24 <LOAD <41 <DISP"
 " <24 <LOAD <41 <DISP"
 " <24 <LOAD <41 <DISP"
 " <24 <LOAD <41 <DISP"
 " <24 <LOAD <41 <DISP"
 " <24 <LOAD <41 <DISP"
 " <24 <LOAD <41 <DISP"
 " <24 <LOAD <41 <DISP"
 " <24 <LOAD <41 <DISP"
 IF LOAD IS-NOT PRESENT GOTO SUBTABLE;
 MATCH LOAD DISP
     ON MATCH GOTO DUP2
     ON NOMATCH INCLUDE
     GOTO INCLUDE4
   ENDCASE
 CASE DUP1
   CRTFORM LINE 1
 "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                 :                INSTRUCTIONS              :"
 "                 :                                          :"
 "                 :  TAB KEY- TO MOVE AROUND FIELDS          :"
 "                 :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 " "
"             J AND DELTA-A VALUES ENTERED ARE ALREADY PRESENT"
 "                  MAKE CORRECTIONS OR CHANGES IF REQUIRED"
  "                   IMMMMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMMM;"
  "                   :        J        :    DELTA-A       : "
  "                   :                 :                  :  "
  "                   HMMMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMMM<"
  " <26  <D.JJ  <41  <T.DELTA_A"
  MATCH JJ
   ON MATCH UPDATE DELTA_A
   GOTO SUBTABLE
ENDCASE
CASE DUP2
   CRTFORM LINE 1
 "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                 :                INSTRUCTIONS              :"
 "                 :                                          :"
```

```
  "                ::  TAB KEY- TO MOVE AROUND FIELDS          :"
  "                ::  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
  "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  " "
 "           LOAD AND DISP VALUES ENTERED ARE ALREADY PRESENT"
  "              MAKE CORRECTIONS OR CHANGES IF REQUIRED"
   "                   IMMMMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMMM;"
   "                   :    LOAD         :     DISP        : "
   "                   :                 :                 :  "
   "                   HMMMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMMM<"
  " <26  <D.LOAD  <41  <T.DISP"
  MATCH LOAD
     ON MATCH UPDATE DISP
     ON NOMATCH INCLUDE
  GOTO SUBTABLE
ENDCASE
DATA VIA FIDEL
END
```

```
*******************************************************************************
*                                                                             *
*                                 FATIGUE.FEX                                 *
*                                                                             *
*******************************************************************************
* THIS ROUTINE IS EXECUTED THROUGH THE 'CONTROL' ROUTINE. THE ROUTINE         *
*  PERFORMS ANY ADDING OR UPDATING OF THE FATIGUE PROPERTY SEGMENT OF THE     *
*  METALS DATABASE. FOR THE REMAINING ADD/UPDATE ROUTINES, SEE THE EXEC       *
*  'CONTROL'. THE GLOBAL VARIABLES ARE PASSED TO THIS ROUTINE FROM 'CONTROL'. *
*******************************************************************************
*                                                                             *
*                        PROGRAM WRITTEN BY JAMES LIZOTTE                     *
*                                    MAY 1986                                 *
*                                                                             *
*******************************************************************************
MODIFY FILE METALS
COMPUTE
 ACTION/A1=;
 NAME='&&NAME';
 ID='&&ID';
 MATCH NAME ID
  ON NOMATCH CRTFORM LINE 1
   "</5"
   " ERROR IN MATCHING NAME - EXITING ROUTINE."
  ON NOMATCH GOTO EXIT
  ON MATCH GOTO FCHECK
 CASE FCHECK
  CRTFORM LINE 1
  "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  "                 :                 INSTRUCTIONS            :"
  "                 :                                         :"
  "                 :  TAB KEY- TO MOVE AROUND FIELDS         :"
  "                 :  PRESS ENTER WHEN ALL FIELDS ARE FILLED :"
  "                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  " </3"
  "                  ENTER FATIGUE TEMPERATURE FOR FATIGUE PROPERTIES"
  "                  <FTEMP"
  "</2"
  "                       C - TO CONTINUE     IMMMMM;    "
  "                       X - TO EXIT         :<ACTION   :  "
  "                       S - TO RESTART      HMMMMM<"
  IF ACTION IS 'X' GOTO EXIT;
  IF ACTION IS 'S' GOTO TOP;
  ***************************************************************************
  *  IF FAT_TEMP MATCHES, THEN THE ROUTINE DISPLAYS THE SEGMENT THAT        *
  *  WAS MATCHED. AND ALLOWS ANY UPDATES. OTHERWISE, THE PROGRAM BRANCHES   *
  *  TO CASE INCLUDE1. TO ENTER A NEW SET OF FATIGUE PROPERTIES.            *
  ***************************************************************************
  MATCH FTEMP
   ON NOMATCH INCLUDE
   ON NOMATCH GOTO INCLUDE1
   ON MATCH CRTFORM LINE 1
  "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  "                 :                 INSTRUCTIONS            :"
  "                 :                                         :"
  "                 :  TAB KEY- TO MOVE AROUND FIELDS         :"
  "                 :  END - IN ANY FIELD WILL EXIT ROUTINE   :"
  "                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 " "
   "     FATIGUE TEMPERATURE MATCHES A SET OF VALUES ALREADY IN TABLE"
   "        - MAKE DESIRED CHANGES AND ENTER TO CONTINUE"
   "    FATIGUE TEMP: <25 <D.FAT_TEMP <40 RATIO (PMIN/PMAX): <T.RATIO"
   "    FREQ: <25 <T.FREQ   <40 WAVEFORM: <T.WAVEFORM"
   "    ENVIRONMENT: <25 <T.ENVIRON"
   "    ORIENTATION: <25 <T.FORIENT"
   "    C: <25 <T.CMAN   <40 C-EXP: <T.CEXP"
   "    M: <25 <T.MM"
   "    RANGE OF K FROM: <25 <T.LOWK  <40 TO: <T.HIGHK"
   "    REF1: <T.FAT_REF1"
   "    REF2: <T.FAT_REF2"
  ON MATCH
   UPDATE RATIO FREQ WAVEFORM ENVIRON FORIENT CMAN CEXP
   UPDATE MM LOWK HIGHK FAT_REF1 FAT_REF2
  ON MATCH GOTO TABLE
 ENDCASE
 CASE TABLE
*******************************************************************
*  THIS CASE ALLOWS YOU TO ENTER DATA INTO EITHER THE CRACK SIZE  *
*   TABLES OR THE GROWTH RATE TABLES. IF THE VALUES ARE REPEATED  *
*   THEN YOU ARE PROMPTED TO CHANGE EXISTING VALUES OR ENTER      *
*   THE CORRECTED VALUES!                                         *
*******************************************************************
 CRTFORM LINE 1
 "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                :              INSTRUCTIONS                 :"
 "                :                                           :"
 "                :  TAB KEY- TO MOVE AROUND FIELDS           :"
 "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED   :"
 "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  " "
 "                  TO ENTER VALUES IN THE SUBSIDUARY TABLES"
 "                    CHOOSE THE APPROPRIATE OPTION"
 " "
 "                   C - FOR CRACK SIZE TABLE"
 "                   G - FOR GROWTH RATE TABLE  IMMMMM;    "
 "                   X - TO EXIT                :<ACTION  :  "
 "                   S - TO RESTART             HMMMMM<"
 IF ACTION IS 'X' GOTO EXIT;
 IF ACTION IS 'S' GOTO TOP;
 IF ACTION IS 'C' GOTO CRTABLE;
 IF ACTION IS 'G'  THEN  GOTO GROTABLE
        ELSE GOTO TABLE;
 ENDCASE
*******************************************************************
*  THIS CASE ENTERS DATA INTO THE CRACK SIZE TABLE AND NOTIFIES   *
*    THE USER IN THE CASE OF A DUPLICATE ENTRY.                   *
*******************************************************************
  CASE CRTABLE
  CRTFORM LINE 1
 "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                :              INSTRUCTIONS                 :"
 "                :                                           :"
 "                :  TAB KEY- TO MOVE AROUND FIELDS           :"
 "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED   :"
 "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  " "
  "                  ENTER THE CRACK SIZE AND CYCLE VALUES"
  "                    IMMMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMM;"
  "                    :  CRACK SIZE    :    CYCLES      : "
  "                    :     (MM)       :                :  "
  "                    HMMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMM<"
  " <27  <A_POINT  <42  <N_POINT"
  " <27  <A_POINT  <42  <N_POINT"
  " <27  <A_POINT  <42  <N_POINT"
  " <27  <A_POINT  <42  <N_POINT"
  " <27  <A_POINT  <42  <N_POINT"
  " <27  <A_POINT  <42  <N_POINT"
  " <27  <A_POINT  <42  <N_POINT"
   IF A_POINT IS-NOT PRESENT THEN GOTO TABLE;
 MATCH A_POINT N_POINT
  ON NOMATCH INCLUDE
  ON NOMATCH GOTO CRTABLE
  ON MATCH CRTFORM LINE 1
 "               IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "               :                INSTRUCTIONS              :"
 "               :                                          :"
 "               :  TAB KEY- TO MOVE AROUND FIELDS          :"
 "               :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "               HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 "  "
  "                      ROW IN CRACK SIZE TABLE FOUND"
  "                     CHECK AND MAKE DESIRED CHANGES"
  "                  IMMMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMM;"
  "                  :  CRACK SIZE    :    CYCLES      : "
  "                  :     (MM)       :                :  "
  "                  HMMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMM<"
  " <24  <D.A_POINT  <39  <T.N_POINT"
 MATCH A_POINT
 ON MATCH UPDATE N_POINT
  GOTO TABLE
ENDCASE
********************************************************************
* THIS CASE ENTERS DATA INTO THE GROWTH RATE TABLE AND NOTIFIES    *
* THE USER IN CASE OF A DUPLICATE ENTRY.                           *
********************************************************************
CASE GROTABLE
  CRTFORM LINE 1
  "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  "                :                INSTRUCTIONS              :"
  "                :                                          :"
  "                :  TAB KEY- TO MOVE AROUND FIELDS          :"
  "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
  "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  " "
  "                         ENTER THE GROWTH RATE DATA"
 "                    IMMMMMMMMMKMMMMMMMMMMMMMMMMKMMMMMMMMMM;"
 "                    :  GROWTH :    GROWTH      :  DELTA-K : "
 "                    :   RATE  :   EXPONENT     :          :  "
 "                    HMMMMMMMMMJMMMMMMMMMMMMMMMMJMMMMMMMMMM<"
 "<24 <GROWTH_RATE <39 <POWER <52 <DELTA_K"
 "<24 <GROWTH_RATE <39 <POWER <52 <DELTA_K"
 "<24 <GROWTH_RATE <39 <POWER <52 <DELTA_K"
 "<24 <GROWTH_RATE <39 <POWER <52 <DELTA_K"
 "<24 <GROWTH_RATE <39 <POWER <52 <DELTA_K"
```

```
  "<24 <GROWTH_RATE <39 <POWER <52 <DELTA_K"
  "<24 <GROWTH_RATE <39 <POWER <52 <DELTA_K"
   IF GROWTH_RATE IS-NOT PRESENT THEN GOTO TABLE;
  MATCH GROWTH_RATE POWER DELTA_K
 ON NOMATCH INCLUDE
 ON NOMATCH GOTO GROTABLE
 ON MATCH CRTFORM LINE 1
 "                  IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                  :                  INSTRUCTIONS          :"
 "                  :                                        :"
 "                  :  TAB KEY- TO MOVE AROUND FIELDS         :"
 "                  :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "                  HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 "  "
  "                          ROW IN GROWTH TABLE FOUND"
  "                         CHECK AND MAKE DESIRED CHANGES"
  "                    IMMMMMMMMMKMMMMMMMMMMMMMMKMMMMMMMMMM;"
  "                    :  GROWTH  :    GROWTH     :  DELTA-K  : "
  "                    :   RATE   :   EXPONENT    :           :  "
  "                    HMMMMMMMMMJMMMMMMMMMMMMMMJMMMMMMMMMM<"
  "<21 <D.GROWTH_RATE <36 <T.POWER <47 <T.DELTA_K"
  MATCH GROWTH_RATE
 ON MATCH UPDATE POWER DELTA_K
 GOTO TABLE
 ENDCASE
 **************************************************************
 *     THIS CASE ADDS A NEW FATIGUE SEGMENT IF THE FATIGUE     *
 * TEMPERATURE DID NOT MATCH.                                  *
 **************************************************************
 CASE INCLUDE1
  COMPUTE
    FAT_TEMP=FAT_TEMP;
   MATCH FAT_TEMP
    ON MATCH CRTFORM LINE 1
 "                  IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                  :                  INSTRUCTIONS          :"
 "                  :                                        :"
 "                  :  TAB KEY- TO MOVE AROUND FIELDS         :"
 "                  :  END - IN ANY FIELD WILL EXIT ROUTINE.   :"
 "                  HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 "  "
   "     ENTER ALL DATA ASSOCIATED WITH THE GIVEN FATIGUE TEMPERATURE"
   "    FATIGUE TEMPERATURE:<30 <D.FAT_TEMP"
   "    RATIO (PMIN/PMAX): <30 <RATIO"
   "    FREQ: <30 <FREQ    <40 WAVEFORM: <WAVEFORM"
   "    ENVIRONMENT: <30 <ENVIRON"
   "    ORIENTATION: <30 <FORIENT"
   "    C: <30 <CMAN    <40 C-EXP: <CEXP"
   "    M: <30 <MM"
   "    RANGE OF K FROM: <30 <LOWK  <40 TO: <HIGHK"
   "    REF1: <FAT_REF1"
   "    REF2: <FAT_REF2"
  MATCH FAT_TEMP
   ON MATCH UPDATE RATIO FREQ WAVEFORM ENVIRON FORIENT CMAN CEXP
        UPDATE MM LOWK HIGHK FAT_REF1 FAT_REF2
  GOTO TABLE
  ENDCASE
  DATA VIA FIDEL
```

END

```
******************************************************************************
*                                                                            *
*                              STRESS.FEX                                    *
*                                                                            *
******************************************************************************
* THIS ROUTINE IS EXECUTED THROUGH THE 'CONTROL' ROUTINE. THE ROUTINE        *
*  PERFORMS ANY ADDING OR UPDATING OF THE STRESS CORROSION PROPERTY SEGMENT  *
*  OF THE METALS DATABASE. FOR THE REMAINING ADD/UPDATE ROUTINES, SEE THE    *
*  EXEC 'CONTROL'.(THE EXEC CONTROL PASSES GLOBAL VARIABLES TO THIS ROUTINE.) *
******************************************************************************
*                                                                            *
*                       PROGRAM WRITTEN BY JAMES LIZOTTE                     *
*                                MAY 1986                                    *
*                                                                            *
******************************************************************************
 MODIFY FILE METALS
 COMPUTE
  ACTION/A1=;
  NAME='&&NAME';
  ID='&&ID';
  MATCH NAME ID
   ON NOMATCH CRTFORM LINE 1
    "</5"
    " ERROR IN MATCHING NAME - EXITING ROUTINE."
   ON NOMATCH GOTO EXIT
   ON MATCH GOTO SCCTEST
  CASE SCCTEST
   CRTFORM LINE 1
   "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   "                :                INSTRUCTIONS         :"
   "                :                                     :"
   "                :  TAB KEY- TO MOVE AROUND FIELDS     :"
   "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
   "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   " </3"
   "                 ENTER  TEMPERATURE FOR STRESS CORROSION PROPERTIES"
   "                 <SCC_TEMP"
   "</2"
   "                      C - TO CONTINUE     IMMMMM;    "
   "                      X - TO EXIT         :<ACTION   :  "
   "                      S - TO RESTART      HMMMMM<"
   IF ACTION IS 'X' GOTO EXIT;
   IF ACTION IS 'S' GOTO TOP;
   ****************************************************************************
   * IF SCC_TEMP MATCHES, THEN THE ROUTINE DISPLAYS THE SEGMENT THAT          *
   *   WAS MATCHED. AND ALLOWS ANY UPDATES. OTHERWISE, THE PROGRAM BRANCHES *
   *   TO CASE INCLUDE1. TO ENTER A NEW SET OF STRESS CORROSION PROPERTIES. *
   ****************************************************************************
   MATCH SCC_TEMP
    ON NOMATCH INCLUDE
    ON NOMATCH GOTO INCLUDE1
    ON MATCH CRTFORM LINE 1
   "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
   "                :                INSTRUCTIONS         :"
   "                :                                     :"
   "                :  TAB KEY- TO MOVE AROUND FIELDS     :"
   "                :  END - IN ANY FIELD WILL EXIT ROUTINE    :"
   "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 "  "
   "     CORROSION TEMPERATURE  <D.SCC_TEMP  MATCHES A SET OF VALUES "
   "     ALREADY IN TABLE! - MAKE DESIRED CHANGES AND ENTER TO CONTINUE"
   "    ENVIRONMENT: <25 <T.SCC_ENVIRON"
   "    FREE POTENTIAL: <25 <T.FREE_POT <40 TEST POTENTIAL: <T.TEST_POT"
   "    KISCC(MPA(M**1/2)): <25 <T.KISCC  <40 K1H (MPA(M**1/2)): <T.K1H"
   "    HCC: <25 <T.SCC_HCC  <40 [H] (MG/KG): <T.SCC_H_CON"
   "    VELOCITY: <25 <T.VELOCITY <40 VELOCITY EXPONENT: <T.VELOC_EXPON"
   "    THERMAL HISTORY:"
  "<T.THERM_HIST"
   "    IRRADIATION HISTORY:"
  "<T.IRRAD_HIST"
  " SCC REF1: <T.SCC_REF1"
  " SCC REF2: <T.SCC_REF2"
  ON MATCH
   UPDATE SCC_ENVIRON FREE_POT TEST_POT KISCC K1H SCC_HCC SCC_H_CON
   UPDATE VELOCITY VELOC_EXPON THERM_HIST IRRAD_HIST SCC_REF1 SCC_REF2
  ON MATCH GOTO TABLE
 ENDCASE
 CASE TABLE
******************************************************************
* THIS CASE ALLOWS YOU TO ENTER DATA INTO EITHER THE CRACK LENGTH *
*   TABLES OR THE CRACK SPEED TABLES. IF THE VALUES ARE REPEATED  *
*   THEN YOU ARE PROMPTED TO CHANGE EXISTING VALUES OR ENTER      *
*   THE CORRECTED VALUES!                                         *
******************************************************************
 CRTFORM LINE 1
 "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                :              INSTRUCTIONS          :"
 "                :                                    :"
 "                :  TAB KEY- TO MOVE AROUND FIELDS     :"
 "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  "  "
 "                  TO ENTER VALUES IN THE SUBSIDUARY TABLES"
 "                    CHOOSE THE APPROPRIATE OPTION"
 "  "
 "                   L - FOR CRACK LENGTH TABLE"
 "                   C - FOR CRACK SPEED TABLE  IMMMMM;    "
 "                   X - TO EXIT                :<ACTION   :  "
 "                   S - TO RESTART             HMMMMM<"
  IF ACTION IS 'X' GOTO EXIT;
  IF ACTION IS 'S' GOTO TOP;
  IF ACTION IS 'C' GOTO CRSTABLE;
  IF ACTION IS 'L'  THEN  GOTO CRLTABLE
        ELSE GOTO TABLE;
  ENDCASE
******************************************************************
*  THIS CASE ENTERS DATA INTO THE CRACK SPEED TABLE AND NOTIFIES  *
*    THE USER IN THE CASE OF A DUPLICATE ENTRY.                    *
******************************************************************
  CASE CRLTABLE
  CRTFORM LINE 1
 "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                :              INSTRUCTIONS          :"
 "                :                                    :"
 "                :  TAB KEY- TO MOVE AROUND FIELDS     :"
 "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
"                   HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 "  "
 "                       ENTER THE CRACK LENGTH AND TIME VALUES"
 "                        IMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMM;"
 "                        :  CRACK LENGTH  :      TIME      : "
 "                        :     (MM)       :     (SEC)      :  "
 "                        HMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMM<"
 " <27  <A_VALUE  <42  <T_VALUE"
 " <27  <A_VALUE  <42  <T_VALUE"
 " <27  <A_VALUE  <42  <T_VALUE"
 " <27  <A_VALUE  <42  <T_VALUE"
 " <27  <A_VALUE  <42  <T_VALUE"
 " <27  <A_VALUE  <42  <T_VALUE"
 " <27  <A_VALUE  <42  <T_VALUE"
 " <27  <A_VALUE  <42  <T_VALUE"
 " <27  <A_VALUE  <42  <T_VALUE"
 " <27  <A_VALUE  <42  <T_VALUE"
  IF A_VALUE IS-NOT PRESENT THEN GOTO TABLE;
 MATCH A_VALUE T_VALUE
  ON NOMATCH INCLUDE
  ON NOMATCH GOTO CRLTABLE
  ON MATCH CRTFORM LINE 1
"                   IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
"                   :                INSTRUCTIONS          :"
"                   :                                      :"
"                   :  TAB KEY- TO MOVE AROUND FIELDS      :"
"                   :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
"                   HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
"  "
 "                        ROW IN CRACK LENGTH TABLE FOUND"
 "                         CHECK AND MAKE DESIRED CHANGES"
 "                      IMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMM;"
 "                      :  CRACK LENGTH  :      TIME      : "
 "                      :     (MM)       :     (SEC)      :  "
 "                      HMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMM<"
 " <24  <D.A_VALUE  <39  <T.T_VALUE"
 MATCH A_VALUE
 ON MATCH UPDATE T_VALUE
  GOTO TABLE
ENDCASE
*********************************************************************
* THIS CASE ENTERS DATA INTO THE CRACK SPEED TABLE AND NOTIFIES     *
*   THE USER IN CASE OF A DUPLICATE ENTRY.                          *
*********************************************************************
CASE CRSTABLE
  CRTFORM LINE 1
  "                  IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  "                  :                INSTRUCTIONS          :"
  "                  :                                      :"
  "                  :  TAB KEY- TO MOVE AROUND FIELDS      :"
  "                  :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
  "                  HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  " "
  "                           ENTER THE CRACK SPEED DATA"
 "                      IMMMMMMMMKMMMMMMMMMMMMMMKMMMMMMMMMM;"
 "                      :  CRACK   :     SPEED     :   SCC    : "
 "                      :  SPEED   :    EXPONENT   : DELTA-K  :  "
 "                      HMMMMMMMMJMMMMMMMMMMMMMMJMMMMMMMMMM<"
 "<24 <CRACK_SPEED <39 <SPEED_EXPON <52 <SCC_DELTA_K"
 "<24 <CRACK_SPEED <39 <SPEED_EXPON <52 <SCC_DELTA_K"
 "<24 <CRACK_SPEED <39 <SPEED_EXPON <52 <SCC_DELTA_K"
 "<24 <CRACK_SPEED <39 <SPEED_EXPON <52 <SCC_DELTA_K"
 "<24 <CRACK_SPEED <39 <SPEED_EXPON <52 <SCC_DELTA_K"
 "<24 <CRACK_SPEED <39 <SPEED_EXPON <52 <SCC_DELTA_K"
 "<24 <CRACK_SPEED <39 <SPEED_EXPON <52 <SCC_DELTA_K"
 "<24 <CRACK_SPEED <39 <SPEED_EXPON <52 <SCC_DELTA_K"
 "<24 <CRACK_SPEED <39 <SPEED_EXPON <52 <SCC_DELTA_K"
 "<24 <CRACK_SPEED <39 <SPEED_EXPON <52 <SCC_DELTA_K"
  IF CRACK_SPEED IS-NOT PRESENT THEN GOTO TABLE;
 MATCH CRACK_SPEED SPEED_EXPON SCC_DELTA_K
ON NOMATCH INCLUDE
ON NOMATCH GOTO CRSTABLE
ON MATCH CRTFORM LINE 1
"                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
"                 :                  INSTRUCTIONS           :"
"                 :                                         :"
"                 :  TAB KEY- TO MOVE AROUND FIELDS         :"
"                 :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
"                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
"  "
 "                         ROW IN CRACK SPEED TABLE FOUND"
 "                          CHECK AND MAKE DESIRED CHANGES"
 "                   IMMMMMMMMMMKMMMMMMMMMMMMMMMMKMMMMMMMMMMMM;"
 "                   :  CRACK   :     SPEED      :   SCC     : "
 "                   :  SPEED   :    EXPONENT    :  DELTA_K  :  "
 "                   HMMMMMMMMMMJMMMMMMMMMMMMMMMMJMMMMMMMMMMMM<"
 "<21 <D.CRACK_SPEED <36 <T.SPEED_EXPON <47 <T.SCC_DELTA_K"
 MATCH CRACK_SPEED
ON MATCH UPDATE SPEED_EXPON SCC_DELTA_K
GOTO TABLE
ENDCASE
****************************************************************
*     THIS CASE ADDS A NEW STRESS CORROSION SEGMENT IF THE     *
*        CORRSOSION TEMPERATURE DID NOT MATCH.                 *
****************************************************************
CASE INCLUDE1
 COMPUTE
   SCC_TEMP=SCC_TEMP;
  MATCH SCC_TEMP
   ON MATCH CRTFORM LINE 1
"                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
"                 :                  INSTRUCTIONS           :"
"                 :                                         :"
"                 :  TAB KEY- TO MOVE AROUND FIELDS         :"
"                 :  END - IN ANY FIELD WILL EXIT ROUTINE.  :"
"                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
"  "
  " ENTER ALL DATA ASSOCIATED WITH THE GIVEN STRESS CORROSION TEMPERATURE"
  "    CORROSION TEMPERATURE: <25 <D.SCC_TEMP"
  "    ENVIRONMENT: <25 <SCC_ENVIRON"
  "    FREE POTENTIAL: <25 <FREE_POT <40 TEST POTENTIAL: <TEST_POT"
  "    KISCC(MPA(M**1/2)): <25 <KISCC  <40 K1H (MPA(M**1/2)): <K1H"
  "    HCC: <25 <SCC_HCC <40 [H] (MG/KG): <SCC_H_CON"
  "    VELOCITY: <25 <VELOCITY <40 VELOCITY EXPONENT: <VELOC_EXPON"
  "    THERMAL HISTORY:"
  " <THERM_HIST"
"    IRRADIATION HISTORY:"
" <IRRAD_HIST"
" SCC REF1: <SCC_REF1"
" SCC REF2: <SCC_REF2"
ON MATCH
 UPDATE SCC_ENVIRON FREE_POT TEST_POT KISCC K1H SCC_HCC SCC_H_CON
 UPDATE VELOCITY VELOC_EXPON THERM_HIST IRRAD_HIST SCC_REF1 SCC_REF2
GOTO TABLE
ENDCASE
DATA VIA FIDEL
END
```

```
*******************************************************************************
*                                                                             *
*                                 TOUGH.FEX                                   *
*                                                                             *
*******************************************************************************
* THIS ROUTINE IS EXECUTED THROUGH THE 'CONTROL' ROUTINE. THE ROUTINE         *
*  PERFORMS ANY ADDING OR UPDATING OF THE TOUGHNESS PROPERTY SEGMENT OF THE   *
*  METALS DATABASE. FOR THE REMAINING ADD/UPDATE ROUTINES, SEE THE EXEC       *
*  'CONTROL'. THE GLOBAL VARIABLES ARE PASSED TO THIS ROUTINE FROM 'CONTROL'. *
*******************************************************************************
*                                                                             *
*                        PROGRAM WRITTEN BY JAMES LIZOTTE                     *
*                                  MAY 1986                                   *
*                                                                             *
*******************************************************************************
MODIFY FILE METALS
COMPUTE
 ACTION/A1=;
 NAME='&&NAME';
 ID='&&ID';
 MATCH NAME ID
  ON NOMATCH CRTFORM LINE 1
   "</5"
   " ERROR IN MATCHING NAME - EXITING ROUTINE."
  ON NOMATCH GOTO EXIT
  ON MATCH GOTO TUFTEST
 ******************************************************************************
 *   THIS CASE PROMPTS FOR THE YIELD STRESS AND IRRADIATION MANTISSA AND      *
 *     MATCHES THEM TO THE DATABASE, AND THEN BRANCHES ACCORDINGLY.           *
 ******************************************************************************
 CASE TUFTEST
  CRTFORM LINE 1
  "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  "                :               INSTRUCTIONS           :"
  "                :                                      :"
  "                :  TAB KEY- TO MOVE AROUND FIELDS      :"
  "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
  "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  " </3"
  "                     ENTER DATA FOR TOUGHNESS PROPERTIES"
  "                          YIELD STRESS: <TOUGH_STRESS"
  "                          IRRADIATION MANTISSA: <IRRAD_MANT "
  "</2"
  "                     C - TO CONTINUE      IMMMMM;    "
  "                     X - TO EXIT          :<ACTION   :  "
  "                     S - TO RESTART       HMMMMM<"
  IF ACTION IS 'X' GOTO EXIT;
  IF ACTION IS 'S' GOTO TOP;
  ****************************************************************************
  *  IF TOUGH_STRESS MATCHES, THEN THE ROUTINE DISPLAYS THE SEGMENT THAT     *
  *   WAS MATCHED. AND ALLOWS ANY UPDATES. OTHERWISE, THE PROGRAM BRANCHES   *
  *   TO CASE INCLUDE1. TO ENTER A NEW SET OF TOUGHNESS PROPERTIES.          *
  ****************************************************************************
  MATCH TOUGH_STRESS  IRRAD_MANT
   ON NOMATCH_INCLUDE
   ON NOMATCH GOTO INCLUDE1
   ON MATCH CRTFORM LINE 1
  "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                  :                    INSTRUCTIONS                :"
 "                  :                                                :"
 "                  :  TAB KEY- TO MOVE AROUND FIELDS                :"
 "                  :  PRESS ENTER WHEN ALL FIELDS ARE FILLED        :"
 "                  HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 "  "
   "    YIELD STRESS AND IRRADIATION MATCH A SET OF VALUES ALREADY IN TABLE"
   "             - MAKE DESIRED CHANGES AND ENTER TO CONTINUE"
   " </1"
   "    YIELD STRESS (MPA): <30 <D.TOUGH_STRESS"
   "    IRRADIATION: <30 <D.IRRAD_MANT  IRRADIATION EXPONENT:<T.IRRAD_EXPON"
   "    FLUENCE: <30 <T.FLUENCE"
   "    N.D.T (CELSIUS): <30 <T.NDT"
   "    F.A.T.T: <30 <T.FATT"
   "    REFERENCE : <T.TOUGH_REF1"
   "    <15 <T.TOUGH_REF2"
   ON MATCH
    UPDATE IRRAD_EXPON FLUENCE NDT FATT TOUGH_REF1 TOUGH_REF2
   ON MATCH GOTO TABLE
 ENDCASE
*******************************************************************
* THIS CASE EITHER UPDATES THE DATA FOR THE CURRENT SET OF          *
*  TOUGHNESS PROPERTIES MATCHED BY TOUGH_STRESS, OR IT INCLUDES A *
*  NEW ROW BY BRANCHING TO CASE INCLUDE2.                            *
*******************************************************************
 CASE TABLE
 CRTFORM LINE 1
 "                  IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                  :                    INSTRUCTIONS                :"
 "                  :                                                :"
 "                  :  TAB KEY- TO MOVE AROUND FIELDS                :"
 "                  :  PRESS ENTER WHEN ALL FIELDS ARE FILLED        :"
 "                  HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  "  "
  "                      ENTER CHARPY TEMPERATURE IN CHARPY TABLE"
  "                      <CH_TEMP"
"</2"
"                         C - TO CONTINUE      IMMMMM;    "
"                         X - TO EXIT          :<ACTION   :  "
"                         S - TO RESTART       HMMMMM<"
 IF CH_TEMP IS-NOT PRESENT GOTO TOP;
 IF ACTION IS 'X' GOTO EXIT;
 IF ACTION IS 'S' GOTO TOP;
  MATCH CH_TEMP
   ON NOMATCH INCLUDE
   ON NOMATCH GOTO INCLUDE2
   ON MATCH CRTFORM LINE 1
"                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
"                 :                    INSTRUCTIONS                :"
"                 :                                                :"
"                 :  TAB KEY- TO MOVE AROUND FIELDS                :"
"                 :  PRESS ENTER WHEN ALL FIELDS ARE FILLED        :"
"                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
"  "
 "                          ROW IN CHARPY TABLE FOUND"
 "                        CHECK AND MAKE DESIRED CHANGES"
 "      IMMMMMMMMKMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMKMMMMMMMM;"
 "      : CHARPY  :              C.V.N (JOULES)              :  MILLS  :"
"     :  TEMP   :    (1)       (2)        (3)       (4)        : LAT EXP :"
"      HMMMMMMMMJMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMJMMMMMMMM<"
" <9 <D.CH_TEMP <21 <T.CVN1 <31 <T.CVN2 <41 <T.CVN3 <50 <T.CVN4 <63 <T.MLS"
ON MATCH UPDATE CVN1 CVN2 CVN3 CVN4 MLS
 GOTO TABLE
ENDCASE
*********************************************************************
* THIS CASE IS EXECUTED WHEN THE YIELD STRESS ENTERED IN THE TOP    *
*   CASE DID NOT MATCH ANY IN THE DATABASE. THEREFORE THE PROGRAM   *
*   ENTERS A NEW SET OF TOUGHNESS PROPERTIES.                       *
*********************************************************************
CASE INCLUDE1
 COMPUTE
  TOUGH_STRESS=TOUGH_STRESS;
  IRRAD_MANT=IRRAD_MANT;
  MATCH TOUGH_STRESS IRRAD_MANT
  ON MATCH CRTFORM LINE 1
  "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  "                :                INSTRUCTIONS           :"
  "                :                                       :"
  "                :  TAB KEY- TO MOVE AROUND FIELDS       :"
  "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
  "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  " "
  "                     ENTER NEW SET OF TOUGHNESS PROPERTIES"
  "  "
  "    YIELD STRESS (MPA): <30 <D.TOUGH_STRESS"
  "    IRRADIATION: <30 <D.IRRAD_MANT <40 IRRADIATION EXPONENT: <IRRAD_EXPON"
  "    FLUENCE: <30 <FLUENCE"
  "    N.D.T (CELSIUS): <30 <NDT"
  "    F.A.T.T: <30 <FATT"
  "    REFERENCE:<TOUGH_REF1"
   " <15 <TOUGH_REF2"
ON MATCH UPDATE IRRAD_EXPON FLUENCE NDT FATT TOUGH_REF1 TOUGH_REF2
 ON MATCH GOTO TABLE
 ON NOMATCH GOTO TOP
 ENDCASE
 *********************************************************************
 * CASE INCLUDE2 CONTINUES TO ADD NEW DATA TO THE DATABASE, EITHER    *
 *   TO THE PREVIOUSLY MATCHED TOUGH_STRESS (FROM CASE TOP), OR TO    *
 *   THE COMPLETELY NEW SET OF TOUGHNESS PROPERTIES.                  *
 *********************************************************************
 CASE INCLUDE2
COMPUTE
 CH_TEMP=CH_TEMP;
 MATCH CH_TEMP
   ON MATCH CRTFORM LINE 1
 "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                :                INSTRUCTIONS           :"
 "                :                                       :"
 "                :  TAB KEY- TO MOVE AROUND FIELDS       :"
 "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  " "
 "                   ENTERING NEW ROW IN CHARPY TABLE"
  "     IMMMMMMMMKMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMKMMMMMMMM;"
  "     : CHARPY :               C.V.N (JOULES)                : MILLS  :"
  "     :  TEMP  :    (1)       (2)        (3)       (4)       : LAT EXP :"
  "      HMMMMMMMMMJMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMJMMMMMMMMM<"
  "<9 <D.CH_TEMP <21 <CVN1 <31 <CVN2 <41 <CVN3 <50 <CVN4 <63 <MLS"
  ON MATCH ŪPDATE CVN1 CVN2 CVN3 CVN4 MLS
 GOTO TOP
 ENDCASE
DATA VIA FIDEL
END
```

```
****************************************************************************
*                                                                          *
*                              NDEPROP.FEX                                 *
*                                                                          *
****************************************************************************
* THIS ROUTINE IS EXECUTED THROUGH THE 'CONTROL' ROUTINE. THE ROUTINE      *
*  PERFORMS ANY ADDING OR UPDATING OF THE THERMAL, ELECTRICAL AND MAGNETIC *
*  PROPERTIES SEGMENT OF THE METALS DATBASE!  FOR THE REMAINING ADD/UPDATE *
*  ROUTINES, SEE THE EXEC 'CONTROL. THE GLOBAL VARIABLES ARE PASSED TO THIS*
*  ROUTINE FROM 'CONTROL'.                                                 *
****************************************************************************
*                                                                          *
*                       PROGRAM WRITTEN BY JAMES LIZOTTE                   *
*                               MAY 1986                                   *
*                                                                          *
****************************************************************************
MODIFY FILE METALS
COMPUTE
 ACTION/A1=;
 NAME='&&NAME';
 ID='&&ID';
 MATCH NAME ID
  ON NOMATCH CRTFORM LINE 1
   "</5"
   " ERROR IN MATCHING NAME - EXITING ROUTINE."
  ON NOMATCH GOTO EXIT
  ON MATCH GOTO RESCHECK
 ***************************************************************************
 * THIS SECTION PROMPTS FOR THE ELECTRICAL RESISTIVITY AND USES THIS FIELD *
 *   TO MATCH TO THE DATABASE. WHETHER OR NOT THE VALUE IS FOUND WILL CAUSE *
 *   THE APPROPRIATE BRANCHING!                                            *
 ***************************************************************************
 CASE RESCHECK
  CRTFORM LINE 1
  "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  "                :               INSTRUCTIONS             :"
  "                :                                        :"
  "                :  TAB KEY- TO MOVE AROUND FIELDS        :"
  "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
  "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  " </3"
  "                       ENTER ELECTRICAL RESISTIVITY "
  "                       <ER"
  "</2"
  "                     C - TO CONTINUE     IMMMMM;    "
  "                     X - TO EXIT         :<ACTION   :  "
  "                     S - TO RESTART      HMMMMMM<"
  IF ACTION IS 'X' GOTO EXIT;
  IF ACTION IS 'S' GOTO TOP;
  *************************************************************************
  *  IF ELECTRIC_RES MATCHES, THEN THE ROUTINE DISPLAYS THE SEGMENT THAT   *
  *  WAS MATCHED. AND ALLOWS ANY UPDATES. OTHERWISE, THE PROGRAM BRANCHES *
  *  TO CASE INCLUDE1. TO ENTER A NEW SET OF PROPERTIES.                   *
  *************************************************************************
  MATCH ER
   ON NOMATCH INCLUDE
   ON NOMATCH GOTO INCLUDE1
   ON MATCH CRTFORM LINE 1
 "                  IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                  :                INSTRUCTIONS             :"
 "                  :                                         :"
 "                  :  TAB KEY- TO MOVE AROUND FIELDS         :"
 "                  :  END - IN ANY FIELD WILL EXIT ROUTINE   :"
 "                  HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 "  "
   "     ELECTRIC RESSISTIVITY MATCHES A SET OF VALUES ALREADY IN TABLE"
   "        - MAKE DESIRED CHANGES AND ENTER TO CONTINUE"
   "    ELECTRIC RES: <25 <D.ER "
   "    SLOPE OF ER: <25 <T.SLOPE"
   "    VARIATION IN ER: <25 <T.ER_VAR"
   "    CURIE TEMP(CELSIUS): <25 <T.CT"
   "    FIELD STRENGTH: <25 <T.CRITICAL_FS"
   "    REFERENCE:<T.NDE_REF1"
   "    REFERENCE:<T.NDE_REF2"
   ON MATCH
    UPDATE SLOPE ER_VAR CT CRITICAL_FS NDE_REF1 NDE_REF2
   ON MATCH GOTO TABLE
  ENDCASE
*****************************************************************
*  THIS CASE ALLOWS YOU TO ENTER DATA INTO EITHER THE MAGNETIC    *
*   PERMEABILITY OR THE CONDUCTIVITY TABLES . IF THE VALUES ARE   *
*   REPEATED THEN YOU ARE PROMPTED TO CHANGE EXISTING VALUES OR   *
*   ENTER THE CORRECTED VALUES!                                   *
*****************************************************************
  CASE TABLE
  CRTFORM LINE 1
  "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  "                 :                INSTRUCTIONS             :"
  "                 :                                         :"
  "                 :  TAB KEY- TO MOVE AROUND FIELDS         :"
  "                 :  PRESS ENTER WHEN ALL FIELDS ARE FILLED :"
  "                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   "  "
  "                   TO ENTER VALUES IN THE SUBSIDUARY TABLES"
  "                     CHOOSE THE APPROPRIATE OPTION"
  "  "
  "               M - FOR MAGNETIC PERMEABILITY TABLE"
  "               C - FOR CONDUCTIVITY TABLE          IMMMMMM;    "
  "               X - TO EXIT                         :<ACTION   :  "
  "               S - TO RESTART                      HMMMMMM<"
  IF ACTION IS 'X' GOTO EXIT;
  IF ACTION IS 'S' GOTO TOP;
  IF ACTION IS 'M' GOTO MAGTABLE;
  IF ACTION IS 'C'  THEN  GOTO CONTABLE
        ELSE GOTO TABLE;
  ENDCASE
*****************************************************************
* THIS CASE ENTERS DATA INTO THE MAGNETIC PERMEABILITY TABLE      *
*   AND NOTIFIES THE USER IN THE CASE OF A DUPLICATE ENTRY.       *
*****************************************************************
   CASE MAGTABLE
   CRTFORM LINE 1
  "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  "                 :                INSTRUCTIONS             :"
  "                 :                                         :"
  "                 :  TAB KEY- TO MOVE AROUND FIELDS         :"
 "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  "  "
  "         ENTER THE MAGNETIC PERMEABILITY AND FIELD STRENGTH VALUES"
  "                    IMMMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMMMM;"
  "                    :   MAGNETIC     :     FIELD        :"
  "                    : PERMEABILITY   :    STRENGTH      :"
  "                    HMMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMMMM<"
  " <24  <PERM  <42  <FS"
  " <24  <PERM  <42  <FS"
  " <24  <PERM  <42  <FS"
  " <24  <PERM  <42  <FS"
  " <24  <PERM  <42  <FS"
  " <24  <PERM  <42  <FS"
  " <24  <PERM  <42  <FS"
  IF PERM IS-NOT PRESENT THEN GOTO TABLE;
 MATCH PERM FS
  ON NOMATCH INCLUDE
  ON NOMATCH GOTO MAGTABLE
  ON MATCH CRTFORM LINE 1
 "               IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "               :                 INSTRUCTIONS             :"
 "               :                                          :"
 "               :  TAB KEY- TO MOVE AROUND FIELDS          :"
 "               :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "               HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 "  "
  "                 ROW IN MAGNETIC PERMEABILITY TABLE FOUND"
  "                     CHECK AND MAKE DESIRED CHANGES"
  "                   IMMMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMMMM;"
  "                   :   MAGNETIC     :     FIELD        :"
  "                   : PERMEABILITY   :    STRENGTH      :"
  "                   HMMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMMMM<"
  " <24  <D.PERM  <42  <T.FS"
 MATCH PERM
 ON MATCH UPDATE FS
  GOTO TABLE
ENDCASE
*********************************************************************
* THIS CASE ENTERS DATA INTO THE CONDUCTIVITY TABLE AND NOTIFIES    *
* THE USER IN CASE OF A DUPLICATE ENTRY.                            *
*********************************************************************
CASE CONTABLE
  CRTFORM LINE 1
  "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  "                :                 INSTRUCTIONS             :"
  "                :                                          :"
  "                :  TAB KEY- TO MOVE AROUND FIELDS          :"
  "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
  "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  " "
  "                          ENTER THE CONDUCTIVITY DATA"
 "               IMMMMMMMMMMMMMKMMMMMMMMMMMMMMKMMMMMMMMMMMMMM;"
 "               : TEMPERATURE :  EXPANSION   : CONDUCTIVITY :"
 "               :  (CELSIUS)  : COEFFICIENT  :              :"
 "               HMMMMMMMMMMMMMJMMMMMMMMMMMMMMJMMMMMMMMMMMMMM<"
 "<21 <NDE_TEMP <34 <EXPAN_COEFF <48 <CONDUCTIV"
 "<21 <NDE_TEMP <34 <EXPAN_COEFF <48 <CONDUCTIV"
```

```
  "<21 <NDE_TEMP <34 <EXPAN_COEFF <48 <CONDUCTIV"
  "<21 <NDE_TEMP <34 <EXPAN_COEFF <48 <CONDUCTIV"
  "<21 <NDE_TEMP <34 <EXPAN_COEFF <48 <CONDUCTIV"
  "<21 <NDE_TEMP <34 <EXPAN_COEFF <48 <CONDUCTIV"
  "<21 <NDE_TEMP <34 <EXPAN_COEFF <48 <CONDUCTIV"
   IF NDE_TEMP IS-NOT PRESENT THEN GOTO TABLE;
  MATCH NDE_TEMP EXPAN_COEFF CONDUCTIV
 ON NOMATCH INCLUDE
 ON NOMATCH GOTO CONTABLE
 ON MATCH CRTFORM LINE 1
 "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                 :                  INSTRUCTIONS           :"
 "                 :                                         :"
 "                 :  TAB KEY- TO MOVE AROUND FIELDS         :"
 "                 :  PRESS ENTER WHEN ALL FIELDS ARE FILLED :"
 "                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 "  "
  "                     ROW IN CONDUCTIVITY TABLE FOUND"
  "                      CHECK AND MAKE DESIRED CHANGES"
  "                IMMMMMMMMMMMMKMMMMMMMMMMMMMKMMMMMMMMMMMMMM;"
  "                : TEMPERATURE :  EXPANSION   : CONDUCTIVITY :"
  "                :  (CELSIUS)  : COEFFICIENT  :              :"
  "                HMMMMMMMMMMMMJMMMMMMMMMMMMMJMMMMMMMMMMMMMM<"
  "<21 <D.NDE_TEMP <34 <T.EXPAN_COEFF <48 <T.CONDUCTIV"
  MATCH NDE_TEMP
 ON MATCH UPDATE EXPAN_COEFF CONDUCTIV
 GOTO TABLE
 ENDCASE
 ***************************************************************
 *     THIS CASE ADDS A NEW  SEGMENT IF THE ELECTRICAL         *
 *       RESISTIVITY DID NOT MATCH.                            *
 ***************************************************************
 CASE INCLUDE1
  COMPUTE
   ER=ER;
  MATCH ER
   ON MATCH CRTFORM LINE 1
 "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                 :                  INSTRUCTIONS           :"
 "                 :                                         :"
 "                 :  TAB KEY- TO MOVE AROUND FIELDS         :"
 "                 :  END - IN ANY FIELD WILL EXIT ROUTINE.  :"
 "                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 "  "
  "  ENTER ALL DATA ASSOCIATED WITH THE GIVEN ELECTRICAL RESISTIVITY"
  "    ELECTRIC RES: <25 <D.ER "
  "    SLOPE OF ER: <25 <SLOPE"
  "    VARIATION IN ER: <25 <ER_VAR"
  "    CURIE TEMP(CELSIUS): <25 <CT"
  "    FIELD STRENGTH: <25 <CRITICAL_FS"
  "    REFERENCE:<NDE_REF1"
  "    REFERENCE:<NDE_REF2"
  ON MATCH
   UPDATE SLOPE ER_VAR CT CRITICAL_FS NDE_REF1 NDE_REF2
  GOTO TABLE
  ENDCASE
  DATA VIA FIDEL
  END
```

```
*************************************************************************
*                                                                       *
*                            METMOVE.FEX                                *
*                                                                       *
*************************************************************************
*    THIS PROGRAM ALLOWS THE USER TO LOAD THE METALS APPLICATIONS ONTO  *
*      FLOPPY DISKS FOR SUBSEQUENT LOADING ONTO ANOTHER PC.             *
*************************************************************************
*                                                                       *
*                    PROGRAM WRITTEN BY JAMES LIZOTTE                   *
*                              JUNE 1986                                *
*                                                                       *
*************************************************************************
-START
-SET &ACTION=' ';
-CRTFORM LINE 1
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-" :                   WELCOME TO THE MOVING PROCEDURE                 :"
-" :                  DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD                 :"
-" :                                                                   :"
-" :      THIS PROCEDURE WILL ALLOW YOU TO LOAD THE METALS DATABASE AND :"
-" :        ALL THE RELATED SUPPORT ROUTINES ONTO FLOPPY DISKS  WHICH CAN :"
-" :        THEN BE LOADED ONTO ANOTHER PC (EQUIPPED WITH PC/FOCUS) AND :"
-" :        USED FREELY.                                               :"
-" :                                                                   :"
-" :        IF YOU WISH TO CONTINUE: 1)  TURN THE PRINTER ON (ONLINE)  :"
-" :                                 2)  INSERT A FLOPPY DISK INTO DRIVE B :"
-" :                                 3)  ENTER THE DESIRED CHOICE BELOW :"
-" :                                                                   :"
-" :              ENTER - M - TO CONTINUE THE MOVE PROCEDURE.          :"
-" :              ENTER - X - TO EXIT TO MAINMENU.                     :"
-" :                        CHOICE: <&ACTION  <75 :"
-" :                                                                   :"
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-IF &ACTION EQ 'X' THEN GOTO EXIT;
-IF &ACTION NE 'M' THEN GOTO START;
DOS COPY METALS.MAS B:METALS.MAS
DOS COPY METALS.FOC B:\
DOS COPY JVSDA.FOC B:\
DOS COPY RAWFILE1.FOC B:\
DOS COPY RAWFILE2.FOC B:\
DOS COPY NDEFILE.FOC B:\
-RUN
-PART2
-CRTFORM LINE 1
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-" :                                                                   :"
-" :                                                                   :"
-" :                                                                   :"
-" :          PLEASE INSERT A NEW FORMATTED DISK INTO DRIVE B:         :"
-" :                                                                   :"
-" :          (MARK THE DISK YOU REMOVE AS THE DATA BASE DISK)         :"
-" :                                                                   :"
-" :                                                                   :"
-" :                                                                   :"
-" :                                                                   :"
-" :                                                                   :"
-" :                                                                   :"
-" :                PRESS ENTER WHEN NEW DISK INSERTED!                                   :"
-" :                                                                                      :"
-" :                                                                                      :"
-" :                                                                                      :"
-" :                                                                                      :"
-" :                                                                                      :"
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
DOS COPY METMENU.FEX B:METMENU.FEX
DOS COPY ALTPROF.FEX B:\
DOS COPY MCONTROL.FEX B:\
DOS COPY DELMET.FEX B:\
DOS COPY MDINPUT.FEX B:\
DOS COPY MBROWSE.FEX B:\
DOS COPY MBACKUP.FEX B:\
DOS COPY MRECOVER.FEX B:\
DOS COPY METTAB.FEX B:\
DOS COPY STREN.FEX B:\
DOS COPY LEFM.FEX B:\
DOS COPY EPFM.FEX B:\
DOS COPY FATIGUE.FEX B:\
DOS COPY STRESS.FEX B:\
DOS COPY TOUGH.FEX B:\
DOS COPY NDEPROP.FEX B:\
DOS COPY METMOVE.FEX  B:\
DOS COPY MOVINSTR.DAT B:\
-RUN
-CRTFORM LINE 1
-" </10"
-"                  HIT CTRL-PRTSC  AND THEN HIT ENTER"
-"                     FOR A COPY OF THE INSTRUCTIONS"
DOS TYPE MOVINSTR.DAT
-RUN
-CRTFORM LINE 1
-"</10"
-"                  INSTRUCTIONS ARE BEING PRINTED"
-"           HIT CTRL-PRTSC AND THEN HIT ENTER ONCE AGAIN"
-EXIT
```

```
***************************
* J.LIZOTTE JUNE 1986     *
********************************************************************************
********************************************************************************

          INSTRUCTIONS TO MOVE METALS DATABASE & SUPPORT APPLICATIONS

********************************************************************************
********************************************************************************


    PLEASE RETAIN THESE INTRUCTIONS TO AID YOU IN LOADING THE METALS DATABASE
AND SUPPORT APPLICATIONS ONTO ANOTHER PC (WHICH HAS HAD PC/FOCUS INSTALLED).
    THESE INSTRUCTIONS WILL AID THE USER IN SETTING UP THE METALS DATA BASE
AND APPLICATIONS AS A SYSTEM.


   YOU WILL NEED :
  *****************


                 1) THE TWO FLOPPIES PRODUCED BY THIS ROUTINE.

                 2) THE PC/FOCUS ACTIVATOR DISK.

                 3) THIS LIST OF INSTRUCTIONS.


   PROCEDURE
****************
                 1) ASSUMING MACHINE HAS BEEN TURNED ON, . .

                 2) (IF REQUIRED ,LOAD DOS INTO MACHINE)

                 3) INSERT APPLICATIONS FLOPPY INTO DRIVE B.

                 4) ISSUE THE COMMAND . . COPY B:\ C:\ . . THEN PRESS ENTER

                 5) ISSUE THE COMMAND . RENAME ALTPROF.FEX PROFILE.FEX

                 6) INSERT THE DATA BASE FLOPPY INTO DISK A:

                 7) ISSUE THE COMMAND . . COPY A:\ C:\ . . THEN PRESS ENTER

                 8) YOU CAN NOW USE THE PC/FOCUS ACTIVATOR DISK TO ENTER
                     PC/FOCUS AND USE THE METALS DATBASE.

       *** NOTE STEPS 3-7 ARE TO BE COMPLETED ONLY ONCE. YOU CAN THEN USE
          THE APPLICATIONS EVERY TIME YOU ENTER PC/FOCUS.

********************************************************************************
********************************************************************************
```

PRESSURE TUBE PROPERTIES DATA BASE

```
SECTION 01.01
             STRUCTURE OF FOCUS    FILE F        ON 07/29/86 AT 11.51.05

         IDSEG
 01      S1
**************
*REFERENCE   **
*            **
*            **
*            **
*            **
***************
 **************
       I
       +-----------------+
       I                 I
       I TEXT            I TUBE
 02    I S0        03    I S1
**************    **************
*ABS1        **   *TUBE_NO     **
*ABS2        **   *POSITION    **
*ABS3        **   *            **
*ABS4        **   *            **
*            **   *            **
***************   ***************
 **************    **************
         ABSFILE         I
                         I
                         I
                         I LOC
                   04    I S3
                  **************
                  *N_DISTANCE  **
                  *F_DISTANCE  **
                  *CLOCK1      **
                  *CLOCK2      **
                  *            **
                  ***************
                   **************
                         I
       +-----------------+------------------+
       I                 I                  I
       I TENSILE         I FRACTURE         I CHEMICAL
 05    I U         06    I U          08    I U
**************    **************     **************
*TEN_UTS     *    *JI          *     *HYD_CONC    *
*TYIELD_STR  *    *TO          *     *HYD_DIST    *
*ELONG_UNIF  *    *CCL         *     *            *
*ELONG_TOTAL *    *            *     *            *
*            *    *            *     *            *
**************    **************     **************
                         I
                         I
                         I
                         I
                         I RESIST
                   07    I S1
                  **************
                  *J           **
                  *DELTA_A     **
                  *            **
                  *            **
                  *            **
                  ***************
                   **************
```

```
FILE=P, SUFFIX=FOC,$
  SEGNAME=IDSEG,SEGTYPE=S1,$
    FIELD=REFERENCE,ALIAS=REF,FORMAT=A20,$


  SEGNAME=TEXT,SEGTYPE=S0,PARENT=IDSEG,LOCATION=ABSFILE,$
    FIELD=ABS1,,FORMAT=A60,$
    FIELD=ABS2,,FORMAT=A60,$
    FIELD=ABS3,,FORMAT=A60,$
    FIELD=ABS4,,FORMAT=A60,$
    FIELD=ABS5,,FORMAT=A60,$


  SEGNAME=TUBE,SEGTYPE=S1,PARENT=IDSEG,$
    FIELD=TUBE_NO,ALIAS=NUMBER,FORMAT=A8,$
    FIELD=POSITION,ALIAS=LOCATION,FORMAT=A6,$


  SEGNAME=LOC,SEGTYPE=S3,PARENT=TUBE,$
    FIELD=N_DISTANCE,ALIAS=ND,FORMAT=F5.1,$
    FIELD=F_DISTANCE,ALIAS=FD,FORMAT=F5.1,$
    FIELD=CLOCK1,,FORMAT=A5,$
    FIELD=CLOCK2,,FORMAT=A5,$
    FIELD=FLUENCE,,FORMAT=F5.2,$
    FIELD=TEMP,,FORMAT=I4,$
    FIELD=REMARKS,ALIAS=COMMENTS,FORMAT=A60,$


  SEGNAME=TENSILE,SEGTYPE=U,PARENT=LOC,$
    FIELD=TEN_UTS,ALIAS=TUTS,FORMAT=I4,$
    FIELD=TYIELD_STR,ALIAS=TYS,FORMAT=I4,$
    FIELD=ELONG_UNIF,ALIAS=EU,FORMAT=F5.2,$
    FIELD=ELONG_TOTAL,ALIAS=ET,FORMAT=F5.2,$
    FIELD=REDUC_AREA,ALIAS=RA,FORMAT=F5.2,$
    FIELD=FS_LONG,ALIAS=FSL,FORMAT=F5.1,$
    FIELD=FS_RADIAL,ALIAS=FSR,FORMAT=F5.1,$


  SEGNAME=CHEMICAL,SEGTYPE=U,PARENT=LOC,$
    FIELD=HYD_CONC,ALIAS=HC,FORMAT=F5.1,$
    FIELD=HYD_DIST,ALIAS=HCC,FORMAT=F5.3,$


  SEGNAME=FRACTURE,SEGTYPE=U,PARENT=LOC,$
    FIELD=JI,,FORMAT=F5.1,$
    FIELD=TO,,FORMAT=F6.2,$
    FIELD=CCL,,FORMAT=F5.1,$


  SEGNAME=RESIST,SEGTYPE=S,PARENT=FRACTURE,$
    FIELD=J,,FORMAT=F7.3,$
    FIELD=DELTA_A,ALIAS=DA,FORMAT=F7.4,$
```

PRESSURE TUBE PROPERTIES DATA BASE APPLICATION ROUTINES

Presented below is a listing of the routines for the pressure tube properties data base. It is important to note that when viewing hardcopies of the routines, some of the special characters which are supported in focus draw mode are not recognized on the printer. This explains many of the characters which seem to form borders around the input areas. These are actually screen borders on the crt output.

	ROUTINE NAME	PAGE NUMBER
	PROPMENU.FEX	130
	CHOOSEREF.FEX	132
	REFTABL.FEX	134
	PROPROF.FEX	135
	PUPDATE.FEX	136
	DELETEP.FEX	144
	PIN.FEX	152
	SCAN.FEX	157
	SCAN2.FEX	160
	PBROW.FEX	161
	REQ.FEX	166
	PBACKUP.FEX	169
	PRECOV.FEX	170
	PMOVE.FEX	171
TEXT FILE -	PMOVIN.DAT	173

```
-************************************************************************
-*                                                                      *
-*                          PROPMENU.FEX                                *
-*                                                                      *
-************************************************************************
-*  THIS IS THE PRIMARY MENU CONTROLLING ALL ASPECTS OF THE PRESSURE    *
-*   TUBE PROPERTIES DATABASE. IT IS EXECUTED VIA THE PROFILE WHICH IS  *
-*   EXECUTED UPON ENTERING FOCUS.                                      *
-************************************************************************
-*                                                                      *
-*                PROGRAM UPDATED BY JAMES LIZOTTE                      *
-*                          JUNE 1986                                   *
-*                                                                      *
-************************************************************************
-SET &MSG = '                                       ';
-SET &MES = '            ';
-SET &OPT = ' ';
-SET &&NAME = '                     ';
-SET &&ID = '          ';
-MAINMENU
-CRTFORM
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-" :                  PRESSURE TUBE PROPERTIES DATABASE                 : "
-" : DATE: <D.&DATE       MAIN SELECTION MENU          TIME: <D.&TOD :"
-" LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
-" :            OPTION               FUNCTION                           :"
-" :            DDDDDD              DDDDDDDDDDD                         :"
-" :              1          INPUT NEW RECORDS                          :"
-" :              2          BROWSE DATABASE                            :"
-" :              3          CHANGE/UPDATE RECORDS                      :"
-" :              4          DELETE SEGMENTS/ENTIRE RECORDS             :"
-" :              5          CREATE A BACKUP DISKETTE OF DATABASE       :"
-" :              6          RECOVERY OF DATABASE VIA BACKUP DISKETTE   :"
-" :              7          PREPARING DETAILED REPORTS                 :"
-" :              8          MOVING THE PROPERTIES DATABASE,APPLICATIONS :"
-" :              X          EXIT                                       :"
-" :                                                                    :"
-" :      SELECT OPTION ===><&OPT        THEN PRESS 'ENTER'              :"
-" :                                                                    :"
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-"  <D.&MSG "
-SET &MES  = IF &OPT EQ '1' OR '2' OR '3' OR '4' THEN  'EX CHOOSREF'
-             ELSE '                ';
&MES
-RUN
-SET &FUNC = DECODE &OPT ( 1 'EX PIN'
-                          2 'EX SCAN'
-                          3 'EX PUPDATE'
-                          4 'EX DELETEP'
-                          5 'EX PPBACKUP'
-                          6 'EX PRECOVER'
-                          7 'TABLETALK'
-                          8 'EX PMOVE'
-                          X 'EXIT'
-                          ELSE 'MAINMENU');
-SET &MSG = IF &FUNC EQ 'MAINMENU' THEN '** INVALID OPTION -REENTER **'
-                                  ELSE '       ';
-IF &FUNC EQ 'EXIT' OR 'MAINMENU' THEN GOTO &FUNC;
```

```
&FUNC
-RUN
-GOTO MAINMENU
-EXIT
```

```
-************************************************************************
-*                                                                      *
-*                          CHOOSREF.FEX                                *
-*                                                                      *
-************************************************************************
-*                                                                      *
-*        THIS ROUTINE CONTROLS THE CHOOSING OF AN OPTION.              *
-*                                                                      *
-************************************************************************
-*                                                                      *
-*                    PROGRAM WRITTEN BY JAMES LIZOTTE                  *
-*                              JULY 1986                               *
-*                                                                      *
-************************************************************************
-BEGIN
-SET &&REF='                   ';
-SET &MES= ' REFERENCE ROUTINE ';
 SET MSG=OFF
-SET &CHOICE=' ';
-SET &LINE='                    ';
-CRTFORM LINE 1
-"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-":         PRESSURE TUBE PROPERTIES DATABASE - <.I.D.&MES <76 :"
-"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
-":                                                                        :"
-":                                                                        :"
-":       PRIOR TO PERFORMING ANY TRANSACTIONS TO THE DATABASE, IT IS       :"
-":       NECCESARY TO INPUT A REFERENCE KEY ASSOCIATED WITH THE DATA IN    :"
-":       QUESTION. THE PRESSURE TUBE PROPERTIES DATA BASE IS DESIGNED TO   :"
-":       ALLOW ACCESS TO DATA ASSOCIATED WITH A SPECIFIC REFERENCE ITEM.   :"
-":                                                                        :"
-":       YOU ARE THERFORE REQUIRED TO INPUT A REFERENCE IN ORDER TO        :"
-":       IDENTIFY THE DATA DESIRED.                                        :"
-":                                                                        :"
-":            ENTER — R — BELOW TO ENTER REFERENCE ITEM.                   :"
-":            ENTER — L — BELOW TO VIEW REFERENCE LIST.                    :"
-":                                                                        :"
-":                 ENTER YOUR CHOICE HERE ==> <&CHOICE <76 :"
-"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-SET &LINE= DECODE &CHOICE ( 'L' 'EX REFTABLE'
-                            ELSE '  ');
&LINE
-RUN
-START
-CRTFORM
-"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-":                                                                        :"
-":                 IF YOU ARE SCANNING, UPDATING ,DELETING OR ENTERING    :"
-":             DATA YOU MAY ENTER A REFERENCE ITEM FOUND IN THE LIST      :"
-":             OF EXISTING REFERENCES (AS APPLICABLE). IF HOWEVER ENTERING :"
-":             NEW DATA CORRESPONDING TO A NEW REFERENCE, YOU MAY ENTER   :"
-":             A NEW REFERENCE ITEM IN THE DATABASE.                      :"
-":                                                                        :"
-":             PLEASE ENTER THE REFERENCE ITEM BELOW:                     :"
-":                                                                        :"
-":                                                                        :"
-":             REFERENCE ITEM? ==> <&&REF <76 :"
-":                                                                        :"
-":                                                                           :"
-"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-RUN
-EXIT
```

```
TABLE FILE P
 HEADING CENTER
 "   THE FOLLOWING IS A LIST OF POSSIBLE REFERENCE ITEMS:"
 "  "
 PRINT REF
FOOTING CENTER =
 "    PRESS ENTER TWICE TO CONTINUE ROUTINE "
END
```

```
******************************************************************************
*                                                                            *
*                               PROFILE.FEX                                  *
*                          ( STORED AS PROPROF.FEX )                         *
*             (EXCLUSIVELY ACCESS TO PRESSURE TUBE PROPERTIES DATABASE)      *
******************************************************************************
*                                                                            *
*   THIS PROGRAM IS EXECUTED UPON ENTRY INTO FOCUS AND SETS THE INITIAL     *
*      PARAMETERS IN THE PROGRAM AS WELL AS ACTIVATING THE USERS PASSWORD!  *
*                                                                            *
******************************************************************************
*                                                                            *
*                      PROGRAM WRITTEN BY JAMES LIZOTTE                      *
*                                 JUNE 1986                                  *
*                                                                            *
******************************************************************************
SET MSG=OFF
-SET &FUNC='            ';
-SET &CHOICE=' ';
-SET &PASS='        ';
-CRTFORM
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-" :                                                                       :"
-" :                           WELCOME TO FOCUS                            :"
-" :                          MMMMMMMMMMMMMMMMMM                           :"
-" :                                                                       :"
-" :             FOR SECURITY REASONS , YOU ARE KINDLY REQUESTED TO        :"
-" :        ENTER YOUR PASSWORD IN THE SPACE PROVIDED BELOW.               :"
-" :                                                                       :"
-" :                                              ---- THANK YOU ----      :"
-" :                                                                       :"
-" :                    PASSWORD:<.NODISP.&PASS <74 :"
-" :                                                                       :"
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
SET PASS=&PASS
-START2
-CRTFORM LINE 1
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-" :                                                                       :"
-" :                          MAKE YOUR SELECTION                          :"
-" :                          MMMMMMMMMMMMMMMMMMM                          :"
-" :                                                                       :"
-" :        ENTER - P - TO VIEW THE PRESSURE TUBE PROPERTIES DATABASE      :"
-" :        ENTER - X - TO EXIT TO DOS                                     :"
-" :                                                                       :"
-" :                                  IMMM;                                :"
-" :                   SELECTION:  :<&CHOICE <38 :    <74 :"
-" :                                  HMMM<                                :"
-" :                                                                       :"
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-SET &FUNC = DECODE &CHOICE (P 'EX NEWMENU'
-                          X 'FIN'
-                          ELSE 'EX PROFILE');
&FUNC
-RUN
-GOTO START2
-EXIT
```

```
***************************************************************************
*                                                                         *
*                              PUPDATE.FEX                                *
*                                                                         *
***************************************************************************
*                                                                         *
*       THIS ROUTINE ALLOWS THE USER TO UPDATE SELECTED FIELDS IN THE     *
*  PRESSURE TUBE PROPERTIES DATABASE. THE CURRENT CONTENTS ARE DISPLAYED  *
*  AND THE USER IS PROMPTED TO UPDATE THE DESIRED VALUES.                 *
*                                                                         *
***************************************************************************
*                                                                         *
*                      PROGRAM WRITTEN BY JAMES LIZOTTE                   *
*                                JULY 1986                                *
*                                                                         *
***************************************************************************
-SET  &INSTR =   ' PRESS PF8 FOR INSTRUCTIONS';
MODIFY FILE P
 COMPUTE
 NREF/A1=;
  ACTION/A1=;
   CRTFORM LINE 1
  "    </3"
  "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  ":                                                                      :"
  ":             WELCOME TO THE UPDATE ROUTINE FOR THE PRESSURE TUBE      :"
  ":        PROPERTIES DATABASE. THIS ROUTINE WILL ALLOW THE USER TO UPDATE :"
  ":        SELECTED FIELDS IN THE DATABASE!                              :"
  ":                                                                      :"
  ":             CHOOSE AN OPTION AND PRESS ENTER TO CONTINUE:            :"
  ":                                                                      :"
  ":                                                                      :"
  ":                       C - TO CONTINUE     IMMMMMM;                   :"
  ":                       X - TO EXIT         :<ACTION   :      <75 :"
  ":                                           HMMMMMM<                   :"
  "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 "    <22   <.F.I.&INSTR <.CLEA. "
 "</4"
 " \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\"
 " [                                                                      ["
 " [                              INSTRUCTIONS                            ["
 " [                            ----------------                          ["
 " [                                                                      ["
 " [          THIS ROUTINE ALLOWS THE USER TO UPDATE FIELDS THROUGHOUT THE  ["
 " [    DATABASE BY SUPPLYING KEYS ASSOCIATED WITH THE DATA TO BE UPDATED.  ["
 " [                                                                      ["
 " [  NOTE - WHEN UPDATING THE KEY FIELDS CAN NOT BE CHANGED, TO CHANGE    ["
 " [         THEM THE ENTIRE SEGMENT MUST BE DELETED AND RE-ENTERED WITH   ["
 " [         THE NEW VALUES. (THIS IS ACCOMPLISHED BY EXITING THIS ROUTINE ["
 " [         AND CHOOSING MENU OPTIONS 4 AND 1 RESPECTIVELY.)              ["
 " [                                                                      ["
 " [  WARNING - WHEN DELETING A SEGMENT, THE SEGMENT AS WELL AS ALL OF     ["
 " [         IT'S CHILD SEGMENTS WILL BE DELETED.                          ["
 " [                                                                      ["
 " [                   PRESS PF7 TO RETURN TO UPDATE SCREEN                ["
 " [\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\["
  IF ACTION EQ 'X' THEN GOTO EXIT;
  IF ACTION EQ 'C' THEN GOTO REFMAT
```

```
                  ELSE GOTO TOP;
 ******************************************************************************
 *     THIS CASE PROMPTS THE USER FOR THE DATA REFERENCE TO ACCESS THE        *
 *     DESIRED RECORDS.                                                       *
 ******************************************************************************
CASE REFMAT
 COMPUTE
   REF='&&REF';
   MATCH REF
  ON MATCH GOTO UPABS
  ON NOMATCH TYPE "ERROR IN MATCHING REFERENCE PLEASE RE-ENTER"
  ON NOMATCH GOTO REFMAT
ENDCASE
 ******************************************************************************
 *                            UPDATE THE ABSTRACT TEXT.                        *
 ******************************************************************************
 CASE UPABS
   NEXT ABS1
     ON NONEXT GOTO UPTUBE
     ON NEXT CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":       UPDATING ABSTRACT TEXT FOR REFERENCE - <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                          :"
":         PLEASE MAKE ANY UPDATES/CHANGES YOU WISH TO THE FOLLOWING        :"
":          TEXT.                                                           :"
":                                                                          :"
":  <T.ABS1 <75 :"
":  <T.ABS2 <75 :"
":  <T.ABS3 <75 :"
":  <T.ABS4 <75 :"
":  <T.ABS5 <75 :"
":                                                                          :"
":           CHOOSE AN OPTION AND PRESS ENTER TO CONTINUE:                  :"
":                                                                          :"
":                       M - MORE ABSTRACT   IMMMMM;                        :"
":                       T - TUBE # DATA     :<ACTION   :      <75 :"
":                       X - TO EXIT         HMMMMM<                        :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
" <22 <.F.I.&INSTR <.CLEA. "
" \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\"
" [                                                                         ["
" [                             INSTRUCTIONS                                ["
" [                             ____________                                ["
" [                                                                         ["
" [         THE FOLLOWING IS A GUIDE TO AID WITH UPDATING DATA FIELDS:      ["
" [                                                                         ["
" [    WHEN PROMPTED TO CHANGE/UPDATE FIELDS - YOU MAY MAKE ANY CHANGES     ["
" [  YOU WISH. THE CURSOR WILL BE PLACED AUTOMATICALLY IN THE FIRST         ["
" [  FIELD WHICH IS AVAILABLE FOR UPDATE. THIS FIELD MAY THEN BE CHANGED    ["
" [  OR SKIPPED OVER.                                                       ["
" [                                                                         ["
" [ 1)  THE TAB KEY WILL POSITION THE CURSOR IN THE NEXT AVAILABLE FIELD.   ["
" [ 2)  THE CURSOR CONTROL KEYS WILL MOVE THE CURSOR ONE SPACE IN THE       ["
" [     INDICATED DIRECTION.                                                ["
" [ 3)  NOTE THAT THE SPACE BAR WILL ERASE CURRENT VALUES IN THE FIELDS.    ["
" [                                                                         ["
" [                                                                         ["
" [                      PRESS PF7 TO RETURN TO UPDATE SCREEN                    ["
" [\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\["
  ON NEXT IF ACTION EQ 'X' THEN GOTO EXIT;
  ON NEXT UPDATE ABS1 ABS2 ABS3 ABS4 ABS5
  ON NEXT IF ACTION EQ 'N' THEN GOTO UPABS
          ELSE GOTO UPTUBE;
ENDCASE
*******************************************************************************
*  THIS CASE PROMPTS THE USER TO INPUT THE TUBE NUMBER FOR THE DATA DESIRED.  *
*  IF THE TUBE NUMBER IS NOT FOUND THE USER IS NOTIFIED.                      *
*******************************************************************************
 CASE UPTUBE
 CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":        UPDATING TUBE LOCATION DATA FOR REFERENCE - <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                              :"
":          PLEASE INPUT THE TUBE NUMBER ASSOCIATED WITH THE DATA               :"
":                 YOU WISH TO UPDATE.                                          :"
":                                                                              :"
":                  TUBE NUMBER:  <NUMBER <75 :"
":                                                                              :"
":                                                                              :"
":            CHOOSE AN OPTION AND PRESS ENTER TO CONTINUE:                     :"
":                                                                              :"
":                                                                              :"
":                          C - TO CONTINUE     IMMMMM;                         :"
":                          X - TO EXIT         :<ACTION   :      <75 :"
":                                              HMMMMM<                         :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF ACTION EQ 'X' THEN GOTO EXIT;
MATCH  TUBE_NO
 ON NOMATCH TYPE "TUBE NUMBER "
              "NOT FOUND IN DATABASE. PLEASE RE-ENTER"
              "TO INPUT NEW TUBE NUMBER , CHOOSE OPTION 1 ON MENU!"
 ON NOMATCH GOTO UPTUBE
 ON MATCH CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":     UPDATING TUBE ID DATA FOR REFERENCE - <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                              :"
":                                                                              :"
":          TUBE NUMBER: <.I.D.NUMBER <75 :"
":                                                                              :"
":                                                                              :"
":          POSITION:    <T.POSITION <75 :"
":                                                                              :"
":                                                                              :"
":                                                                              :"
":                                                                              :"
":                                                                              :"
":                                                                              :"
":                    S - SPECIMEN LOC. DATA  IMMMMM;                           :"
":                    T - NEXT TUBE NUMBER    :<ACTION   :      <75 :"
":                    X - TO EXIT             HMMMMM<                           :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 MATCH TUBE_NO
  ON NOMATCH TYPE "ERROR IN MATCHING TUBE_NO PLEASE BEGIN AGAIN!"
  ON NOMATCH GOTO UPTUBE
  ON MATCH UPDATE  POSITION
  ON MATCH IF ACTION EQ 'T' THEN GOTO UPTUBE
                            ELSE IF ACTION EQ 'X' THEN GOTO EXIT
                            ELSE GOTO UPSPEC;
  ENDCASE
*************************************************************************
*   THIS CASE PROMPTS THE USER TO INPUT KEYS ASSOCIATED WITH SPECIMEN    *
*   LOCATION IN ORDER TO UPDATE LOCATION DATA.                           *
*************************************************************************
 CASE UPSPEC
 CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":    UPDATING SPECIMEN LOCATION FOR REFERENCE - <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                       :"
":         PLEASE INPUT THE FOLLOWING KEYS IN ORDER TO LOCATE THE        :"
":           DESIRED SPECIMEN LOCATION DATA TO UPDATE.                   :"
":                                                                       :"
":     DISTANCE FROM INLET: <N_DISTANCE - <F_DISTANCE <75 :"
":     CLOCK POSITION: <CLOCK1¯- <CLOCK2 <75¯:"
":                                                                       :"
":                                                                       :"
":           CHOOSE AN OPTION AND PRESS ENTER TO CONTINUE:               :"
":                                                                       :"
":                                                                       :"
":                        C - TO CONTINUE     IMMMMM;                    :"
":                        X - TO EXIT         :<ACTION   :      <75 :"
":                                            HMMMMM<                    :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF ACTION EQ 'X' THEN GOTO EXIT;
MATCH  ND FD CLOCK1
 ON NOMATCH TYPE "ERROR MATCHING KEYS - PLEASE RETRY"
 ON NOMATCH GOTO UPSPEC
 ON MATCH CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":    UPDATING SPECIMEN LOCATION DATA FOR REFERENCE - <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
": TUBE NUMBER: <D.NUMBER <75 :"
": DISTANCE FROM INLET: <D.N_DISTANCE - <D.F_DISTANCE <75 :"
": CLOCK POSITION: <D.CLOCK1¯- <D.CLOCK2 <75¯:"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":           UPDATE THE FIELDS BELOW,CHOOSE OPTION THEN PRESS ENTER      :"
": TEST TEMPERATURE: <T.TEMP <75 :"
": FLUENCE:          <T.FLUENCE <75 :"
": REFERENCE:                                                            :"
":   <T.COMMENTS <75 :"
":                                                                       :"
":                  T - TENSILE PROPERTIES                               :"
":                  C - CHEMICAL PROPERTIES                              :"
":                  F - FRACTURE PROPERTIES                              :"
":                  S - NEXT SPECIMEN          IMMMMM;                   :"
":                  N - NEXT TUBE NUMBER       :<ACTION   :      <75 :"
":                  X - TO EXIT                HMMMMM<                   :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 "<22 <.F.I.&INSTR <.CLEA."
 " \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\"
 " [                                                                     ["
" [                              INSTRUCTIONS                              ["
" [                                                                        ["
" [      THE SPECIMEN LOCATION SCREEN HAS 3 KEYS FIELDS USED TO IDENTIFY   ["
" [   THE TEST SPECIMEN AND RELATED SEGMENT DATA. THESE KEY FIELDS CAN     ["
" [   NOT BE UPDATED.THEY HOWEVER CAN BE DELETED AND THEN NEW DATA CAN     ["
" [   BE RE-ENTERED. (MENU OPTIONS 4 AND 1 RESPECTIVELY.) (NOTE THAT       ["
" [   DELETING THIS SEGMENT WILL CAUSE DELETION OF ALL IT'S CHILDREN       ["
" [   SUCH AS CHEMICAL,TENSILE AND FRACTURE PROPERTIES.)                   ["
" [                                                                        ["
" [      UPDATE THE FIELDS TEMP,FLUENCE AND REFERENCE,CHOOSE AN OPTION     ["
" [    THEN PRESS ENTER. THE TAB KEY AND CURSOR CONTROL KEYS WILL ALLOW    ["
" [    ACCESS TO THE FIELDS.                                               ["
" [                                                                        ["
" [                 PRESS PF7 TO RETURN TO UPDATE SCREEN                   ["
" [                                                                        ["
" [\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\["
 MATCH ND FD CLOCK1
  ON NOMATCH TYPE "ERROR IN MATCHING KEYS,PLEASE BEGIN AGAIN!"
  ON NOMATCH GOTO UPSPEC
  ON MATCH UPDATE TEMP FLUENCE COMMENTS
  ON MATCH IF ACTION EQ 'N' THEN GOTO UPTUBE
                           ELSE IF ACTION EQ 'X' THEN GOTO EXIT
                           ELSE IF ACTION EQ 'C' THEN GOTO UPTEN
                           ELSE IF ACTION EQ 'F' THEN GOTO UPFRAC
                           ELSE IF ACTION EQ 'S' THEN GOTO UPSPEC
                                ELSE GOTO UPTEN;
  ENDCASE
  ***************************************************************************
  *  THIS CASE ALLOWS THE USER TO UPDATE THE TENSILE PROPERTIES.THE CONTENTS *
  *   OF THE CURRENT FIELDS ARE DISPLAYED AND CAN BE UPDATED AT WILL.        *
  ***************************************************************************
 CASE UPTEN
  NEXT TUTS
    ON NONEXT GOTO UPCHEM
    ON NEXT CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":    UPDATING TENSILE PROPERTIES FOR REFERENCE - <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
": TUBE NUMBER: <D.NUMBER <75 :"
": DISTANCE FROM INLET: <D.N_DISTANCE - <D.F_DISTANCE <75 :"
": CLOCK POSITION: <D.CLOCK1 - <D.CLOCK2 <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                               UPDATE THE FIELDS BELOW:     :"
": U.T.S: <25 <T.TUTS <75 :"
": YIELD STRENGTH: <25 <T.TYS <75 :"
": REDUCTION IN AREA: <25 <T.RA <75 :"
": ELONGATION: UNIFORM -  <25 <T.EU <75 :"
":             TOTAL   -  <25 <T.ET <75 :"
": FRACTURE STRAIN: LONGITUDINAL - <38 <T.FSL <75 :"
":                  RADIAL - <38 <T.FSR <75 :"
":                                                                           :"
":                  C - CHEMICAL PROPERTIES  IMMMMM;                          :"
":                  S - NEXT SPECIMEN        :<ACTION   :     <75 :"
":                  X - TO EXIT              HMMMMM<                          :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 ON NEXT UPDATE TUTS TYS EU ET RA FSL FSR
 ON NEXT IF ACTION EQ 'X' THEN GOTO EXIT
        ELSE IF ACTION EQ 'S' THEN GOTO UPSPEC
```

```
               ELSE GOTO UPCHEM;
 ENDCASE
 *****************************************************************************
 * THIS CASE ALLOWS THE CHEMICAL PROPERTIES TO BE UPDATED. THE CURRENT VALUES *
 * ARE DISPLAYED AND CAN BE CHANGED/UPDATED AS DESIRED.                       *
 *****************************************************************************
 CASE UPCHEM
  NEXT HYD_CONC
   ON NONEXT GOTO UPFRAC
   ON NEXT CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":    UPDATING CHEMICAL PROPERTIES FOR REFERENCE - <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
": TUBE NUMBER: <D.NUMBER <75 :"
": DISTANCE FROM INLET: <D.N_DISTANCE - <D.F_DISTANCE <75 :"
": CLOCK POSITION: <D.CLOCK1 - <D.CLOCK2 <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                        :"
":               UPDATE THE FOLLOWING FIELDS AS DESIRED,                  :"
":               THEN CHOOSE AN OPTION AND PRESS ENTER                    :"
":                                                                        :"
":      HYDROGEN CONCENTRATION: <25 <T.HC <75 :"
":      HCC: <25 <T.HCC <75 :"
":                                                                        :"
":                                                                        :"
":                 F - FRACTURE PROPERTIES  IMMMMM;                       :"
":                 S - NEXT SPECIMEN        :<ACTION   :      <75 :"
":                 X - TO EXIT              HMMMMM<                       :"
":                                                                        :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 ON NEXT UPDATE HC HCC
 ON NEXT IF ACTION EQ 'X' THEN GOTO EXIT
        ELSE IF ACTION EQ 'S' THEN GOTO UPSPEC
             ELSE GOTO UPFRAC;
 ENDCASE
 ***************************************************************************
 * THIS CASE ALLOWS FOR THE UPDATE OF THE FRACTURE PROPERTIES. THE CURRENT  *
 *  VALUES ARE DISPLAYED AND CAN BE UPDATED AS DESIRED.                     *
 ***************************************************************************
 CASE UPFRAC
   NEXT JI
    ON NONEXT GOTO TOP
    ON NEXT CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":    UPDATING FRACTURE PROPERTIES FOR REFERENCE - <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
": TUBE NUMBER: <D.NUMBER <75 :"
": DISTANCE FROM INLET: <D.N_DISTANCE - <D.F_DISTANCE <75 :"
": CLOCK POSITION: <D.CLOCK1 - <D.CLOCK2 <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                        :"
":               UPDATE THE FOLLOWING FIELDS AS DESIRED,                  :"
":               THEN CHOOSE AN OPTION AND PRESS ENTER                    :"
":                                                                        :"
":      JI: <20 <T.HC <75 :"
":      TO: <20 <T.HCC <75 :"
":      CCL: <20 <T.CCL <75 :"
":                                                                        :"
":                 J - J VS DELTA_A TABLE   IMMMMM;                         :"
":                 S - NEXT SPECIMEN        :<ACTION   :     <75 :"
":                 X - TO EXIT              HMMMMM<                         :"
":                                                                          :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
ON NEXT UPDATE JI TO CCL
ON NEXT IF ACTION EQ 'X' THEN GOTO EXIT
        ELSE IF ACTION EQ 'S' THEN GOTO UPSPEC
             ELSE GOTO UPJ;
ENDCASE
***************************************************************************
*   THIS CASE ALLOWS THE USER TO SEQUENTIALLY VIEW THE J VS DELTA-A TABLE  *
*     WITH THE OPTION OF CHANGING THE DELTA-A VALUES.                      *
***************************************************************************
CASE UPJ
COMPUTE
  NEXT J
   ON NONEXT GOTO TOP
   ON NEXT CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":     UPDATING J VS DELTA TABLE FOR REFERENCE - <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
": TUBE NUMBER: <D.NUMBER <75 :"
": DISTANCE FROM INLET: <D.N_DISTANCE - <D.F_DISTANCE <75 :"
": CLOCK POSITION: <D.CLOCK1 - <D.CLOCK2 <75 :"
": JI: <D.JI                  TO: <D.TO                 CCL: <D.CCL <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":              J                   :               DELTA-A                 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMNMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                  :                                       :"
":          <D.J                    <-4 :               <T.DELTA_A    <75 :"
":                                  :                                       :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":           CHOOSE AN OPTION AND PRESS ENTER TO CONTINUE:                  :"
":                      J - NEXT J VALUE    IMMMMM;                         :"
":                      X - TO EXIT         :<ACTION   :      <75 :"
":                      S - NEXT SPECIMEN   HMMMMM<                         :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
"<22 <.I.F.&INSTR <.CLEA."
"\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\"
"[                                                                         ["
"[                             INSTRUCTIONS                                ["
"[                                                                         ["
"[       YOU MAY UPDATE ANY DELTA_A VALUE ASSOCIATED WITH J. YOU MAY NOT   ["
"[    CHANGE J AS IT IS A KEY FIELD .                                      ["
"[                                                                         ["
"[    TO CHANGE J YOU CAN EITHER:                                          ["
"[                    1) DELETE THE J AND ASSOCIATED DELTA_A VALUE AND     ["
"[       RE_ENTER NEW VALUES.(MENU OPTIONS 4 AND 1 RESPECTIVELY.)          ["
"[                                                                         ["
"[                    2) SIMPLY ADD A NEW J AND ACCOMPANYING DELTA_A       ["
"[       VALUES.(MENU OPTION 1.)                                           ["
"[                                                                         ["
"[                                                                         ["
"[                   PRESS PF7 TO RETURN TO UPDATE SCREEN                  ["
"[                                                                         ["
"[\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\["
 ON NEXT UPDATE  DELTA_A
```

```
   ON NEXT IF ACTION EQ 'X' THEN GOTO EXIT
                       ELSE IF ACTION EQ 'S' THEN GOTO UPSPEC
                       ELSE GOTO UPJ;
   ENDCASE
   DATA VIA FIDEL
   END
-RUN
```

```
*****************************************************************************
*                                                                           *
*                               DELETEP.FEX                                 *
*                                                                           *
*****************************************************************************
*                                                                           *
*  THIS ROUTINE ALLOWS THE USER TO DELETE SEGMENTS OF THE PRESSURE TUBE     *
*   PROPERTIES DATA BASE.                                                   *
*                                                                           *
*****************************************************************************
*                                                                           *
*                     PROGRAM WRITTEN BY JAMES LIZOTTE                      *
*                               JULY 1986                                   *
*                                                                           *
*****************************************************************************
-SET &INSTR =  ' PRESS PF8 FOR INSTRUCTIONS';
MODIFY FILE P
 COMPUTE
   ACTION/A1=;
   BUFF/A8=;
   NREF/A1=;
 CRTFORM LINE 1
 "</2"
 "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 ":                                                                        :"
 ":          WELCOME TO THE PRESSURE TUBE PROPERTIES DELETION ROUTINE.     :"
 "LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
 ":                                                                        :"
 ":      THIS ROUTINE WILL ALLOW YOU TO DELETE SEGMENT(S) OF DATA ACCORDING :"
 ":       TO THE KEYS YOU PROVIDE.                                         :"
 ":                                                                        :"
 ":                                                                        :"
 ":                 CHOOSE AN OPTION NOW:                                  :"
 ":                                                                        :"
 ":                     C - TO CONTINUE     IMMMMM;                        :"
 ":                     X - TO EXIT         :<ACTION   :      <76 :"
 ":                                         HMMMMM<                        :"
 "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 " <22 <.I.&INSTR <.CLEA."
 "</3"
 "[________________________________________________________________________["
 "[                            INTRODUCTION                                ["
 "[                          DDDDDDDDDDDDDDDD                              ["
 "[                                                                        ["
 "[          THE PURPOSE OF THIS ROUTINE IS TO ALLOW DELETION OF A SEGMENT/ ["
 "[   SEGMENTS ACCORDING TO THE KEYS WHICH YOU PROVIDE. THIS ROUTINE       ["
 "[   THEREFORE ASSUMES THAT THE USER HAS VIEWED THE DATA IN QUESTION AND  ["
 "[   HAS THE REQUIRED KEY FIELD VALUES AVAILABLE FOR INPUT.               ["
 "[                                                                        ["
 "[          IF THIS IS NOT THE CASE THEN RETURN TO THE MENU AND VIEW THE  ["
 "[   DATA IN QUESTION (VIA MENU OPTION 2- BROWSE DATABASE).               ["
 "[                                                                        ["
 "[          WHEN YOU HAVE FOUND THE DATA IN QUESTION PLEASE MAKE NOTE OF  ["
 "[   THE KEY FIELDS IN ORDER TO USE THEM AS INPUT TO THIS ROUTINE.        ["
 "[                                                                        ["
 "[                                                                        ["
 "[               PRESS PF7 TO RETURN TO PREVIOUS SCREEN                   ["
 "[                                                                        ["
 "[\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\["
     IF ACTION EQ 'X' THEN GOTO EXIT
                      ELSE GOTO D1;
   ***********************************************************************************
   * THIS CASE PROMPTS THE USER TO INPUT THE REFERENCE ITEM WITH WHICH TO            *
   *  ASSOCIATE THE DATA TO BE DELETED.                                              *
   ***********************************************************************************
  CASE D1
  COMPUTE
     REF='&&REF';
     MATCH REF
   ON MATCH GOTO DELNEXT
   ON NOMATCH TYPE "ERROR IN MATCHING REFERENCE PLEASE RE-ENTER"
   ON NOMATCH GOTO D1
 ENDCASE
****************************************************************************************
 *                             DELETION OPTIONS                                         *
****************************************************************************************
CASE DELNEXT
CRTFORM LINE 1
 "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 ":              DELETION OPTIONS FOR REFERENCE - <.F.D.REF <75 :"
 "LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
 ":                                                                        :"
 ":         PLEASE CHOOSE AN OPTION BELOW TO DELETE THE DESIRED SEGMENT(S). :"
 "GDDDDDDDDDDDDDDDDDDDDDDDDDDDDDBDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD6"
 ":             OPTION NUMBER          3        SEGMENT DELETED            :"
 "GDDDDDDDDDDDDDDDDDDDDDDDDDDDDDEDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD6"
 ":                     1              3            ABSTRACT              :"
 ":                     2              3    TUBE # (AND ALL RELATED DATA)  :"
 ":                     3              3    SPECIMEN (AND ALL RELATED DATA) :"
 ":                     4              3    TENSILE PROPERTIES             :"
 ":                     5              3    CHEMICAL PROPERTIES            :"
 ":                     6              3    FRACTURE ( AND J VS DA TABLE)  :"
 ":                     X              3    TO EXIT ROUTINE                :"
 "GDDDDDDDDDDDDDDDDDDDDDDDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD6"
 ":                                          IMMMMMM;                     :"
 ":                ENTER YOUR CHOICE HERE ==>  : <ACTION  <52 :      <75 :"
 ":                                          HMMMMMM<                     :"
 "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   IF ACTION EQ 'X' THEN GOTO EXIT
             ELSE IF ACTION EQ '1' THEN GOTO DELABS
             ELSE IF ACTION EQ '2' THEN GOTO DELTUBE
             ELSE IF ACTION EQ '3' THEN GOTO DELSPEC
             ELSE IF ACTION EQ '4' THEN GOTO DELTEN
             ELSE IF ACTION EQ '5' THEN GOTO DELCHEM
             ELSE IF ACTION EQ '6' THEN GOTO DELFRAC
                      ELSE GOTO DELNEXT;
  ENDCASE
 ***************************************************************************************
 *                          DELETING THE ABSTRACT TEXT.                                *
 ***************************************************************************************
  CASE DELABS
    NEXT ABS1
      ON NONEXT GOTO DELNEXT
      ON NEXT CRTFORM LINE 1
 "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 ":        DELETING ABSTRACT TEXT FOR REFERENCE - <.F.D.REF <75 :"
```

```
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                          :"
":          THE FOLLOWING IS AN EXERPT FROM THE ABSTRACT. TO DELETE THE     :"
":  ENTIRE ABSTRACT CHOOSE OPTION 'D' BELOW.                                :"
":                                                                          :"
":  <D.ABS1 <75 :"
":  <D.ABS2 <75 :"
":  <D.ABS3 <75 :"
":  <D.ABS4 <75 :"
":  <D.ABS5 <75 :"
":                                                                          :"
":            CHOOSE AN OPTION AND PRESS ENTER TO CONTINUE:                 :"
":                                                                          :"
":                     D - DELETE ABSTRACT   IMMMMMM;                       :"
":                     C - CHOOSE NEW OPTION :<ACTION   :      <75 :"
":                     X - TO EXIT           HMMMMMM<                       :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  ON NEXT IF ACTION EQ 'X' THEN GOTO EXIT
                 ELSE IF ACTION EQ 'C' THEN GOTO DELNEXT
                    ELSE IF ACTION NE 'D' THEN GOTO DELABS;
  ON NEXT DELETE ABS1
  ON NEXT TYPE " ABSTRACT FOR <.F.D.REF DELETED"
GOTO DELNEXT
ENDCASE
*****************************************************************************
*  THIS CASE PROMPTS THE USER TO INPUT THE TUBE NUMBER FOR THE DATA TO BE   *
*  DELETED IF THE TUBE NUMBER IS NOT FOUND THE USER IS NOTIFIED.            *
*****************************************************************************
 CASE DELTUBE
 CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":        DELETING TUBE LOCATION DATA FOR REFERENCE - <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                          :"
":          PLEASE INPUT THE TUBE NUMBER ASSOCIATED WITH THE DATA           :"
":                YOU WISH TO DELETE.                                       :"
":                                                                          :"
":                 TUBE NUMBER:  <NUMBER <75 :"
":                                                                          :"
":                                                                          :"
":            CHOOSE AN OPTION AND PRESS ENTER TO CONTINUE:                 :"
":                                                                          :"
":                                                                          :"
":                      C - TO CONTINUE     IMMMMMM;                        :"
":                      X - TO EXIT         :<ACTION   :      <75 :"
":                                          HMMMMMM<                        :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF ACTION EQ 'X' THEN GOTO EXIT;
MATCH  TUBE_NO
 ON NOMATCH TYPE "TUBE NUMBER "
              "NOT FOUND IN DATABASE. PLEASE RE-ENTER"
              "TO INPUT NEW TUBE NUMBER , CHOOSE OPTION 1 ON MENU!"
 ON NOMATCH GOTO DELTUBE
 ON MATCH CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":      DELETING TUBE ID DATA FOR REFERENCE - <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                          :"
":   BELOW ARE THE TUBE IDENTIFICATION DATA FIELDS RELATED WITH THE          :"
":    DATA WHICH WILL BE DELETED.                                            :"
":       *** NOTE THAT DELETION OF THIS SEGMENT WILL CAUSE DELETION OF       :"
":    ALL CHILD SEGMENTS INCLUDING - ALL SPECIMENS FROM THIS TUBE #          :"
":                                 - ALL THE PROPERTIES TABLES RELATED TO    :"
":                                   THE ABOVE SPECIMENS.                    :"
":                                                                           :"
":          TUBE NUMBER: <D.NUMBER <75 :"
":          POSITION:    <D.POSITION <75 :"
":                                                                           :"
":                                                                           :"
":                ENTER THE DESIRED ACTION BELOW:                            :"
":                   D - DELETE                IMMMMM;                       :"
":                   C - CHOOSE NEW OPTION     :<ACTION   :       <75 :"
":                   X - TO EXIT               HMMMMM<                       :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF ACTION EQ 'X' THEN GOTO EXIT
          ELSE IF ACTION NE 'D' THEN GOTO DELNEXT;
 MATCH TUBE_NO
  ON NOMATCH TYPE "ERROR IN MATCHING TUBE_NO PLEASE BEGIN AGAIN!"
  ON NOMATCH GOTO DELTUBE
  ON MATCH DELETE NUMBER
  GOTO DELNEXT
  ENDCASE
******************************************************************************
*   THIS CASE PROMPTS THE USER TO INPUT KEYS ASSOCIATED WITH SPECIMEN        *
*   LOCATION IN ORDER TO DELETE SPECIMEN DATA.                               *
******************************************************************************
 CASE DELSPEC
 CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":    DELETING SPECIMEN LOCATION FOR REFERENCE - <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                           :"
":          PLEASE INPUT THE FOLLOWING KEYS IN ORDER TO LOCATE THE           :"
":            DESIRED SPECIMEN LOCATION DATA TO BE DELETED.                  :"
":                                                                           :"
":      TUBE NUMBER: <NUMBER <75 :"
":      DISTANCE FROM INLET: <N_DISTANCE - <F_DISTANCE <75 :"
":      CLOCK POSITION: <CLOCK1 - <CLOCK2 <75 :"
":                                                                           :"
":                                                                           :"
":            CHOOSE AN OPTION AND PRESS ENTER TO CONTINUE:                  :"
":                                                                           :"
":                                                                           :"
":                        C - TO CONTINUE      IMMMMM;                       :"
":                        X - TO EXIT          :<ACTION   :       <75 :"
":                                             HMMMMM<                       :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF ACTION EQ 'X' THEN GOTO EXIT;
MATCH NUMBER ND FD CLOCK1
 ON NOMATCH TYPE "ERROR MATCHING KEYS - PLEASE RETRY"
 ON NOMATCH GOTO DELSPEC
 ON MATCH CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":   DELETING SPECIMEN LOCATION DATA FOR REFERENCE - <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
": TUBE NUMBER: <D.NUMBER <75 :"
```

```
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                          :"
":             THE FOLLOWING ARE THE SPECIMEN LOCATION DATA FIELDS WHICH    :"
":  WILL BE DELETED. ALSO ALL CHILD FIELDS (I.E. THE PROPERTIES SEGMENTS)  :"
":  WILL ALSO BE DELETED.                                                   :"
":                                                                          :"
": DISTANCE FROM INLET: <D.N_DISTANCE - <D.F_DISTANCE <75 :"
": CLOCK POSITION: <D.CLOCK1¯- <D.CLOCK2 <75¯:"
": FLUENCE: <D.FLUENCE             TEMPERATURE: <D.TEMP <75 :"
": REMARKS: <D.REMARKS <75 :"
":                                                                          :"
":                    ENTER THE DESIRED OPTION BELOW:                       :"
":                    D - DELETE SEGMENTS       IMMMMM;                     :"
":                    C - CHOOSE NEW OPTION     :<ACTION   :      <75 :"
":                    X - TO EXIT               HMMMMM<                     :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF ACTION EQ 'X' THEN GOTO EXIT
    ELSE IF ACTION NE 'D' THEN GOTO DELNEXT;
  MATCH ND FD CLOCK1
   ON NOMATCH TYPE "ERROR IN MATCHING KEYS,PLEASE BEGIN AGAIN!"
   ON NOMATCH GOTO DELSPEC
   ON MATCH DELETE ND
   GOTO DELNEXT
   ENDCASE
   ***************************************************************************
   *  THIS CASE ALLOWS THE USER TO DELETE THE TENSILE PROPERTIES.THE CONTENTS *
   *   OF THE CURRENT FIELDS ARE DISPLAYED AND CAN BE DELETED AT WILL.        *
   ***************************************************************************
 CASE DELTEN
 CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":    DELETING TENSILE PROPERTIES FOR REFERENCE - <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                          :"
":          IN ORDER TO LOCATE THE CORRECT TENSILE PROPERTIES SEGMENT      :"
":   PLEASE ENTER THE FOLLOWING KEY FIELDS ASSOCIATED WITH THE DATA TO     :"
":   BE DELETED.                                                            :"
":                                                                          :"
":                                                                          :"
":                                                                          :"
": TUBE NUMBER: <NUMBER <75 :"
": DISTANCE FROM INLET: <N_DISTANCE - <F_DISTANCE <75 :"
": CLOCK POSITION: <CLOCK1¯- <CLOCK2 <75¯:"
":                                                                          :"
":                                                                          :"
":                                                                          :"
":                    C - CONTINUE              IMMMMM;                     :"
":                    X - TO EXIT               :<ACTION   :      <75 :"
":                                              HMMMMM<                     :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF ACTION EQ 'X' THEN GOTO EXIT;
  MATCH NUMBER ND FD CLOCK1
   ON NOMATCH TYPE " ERROR MATCHING KEYFIELDS: PLEASE RE-ENTER"
   ON NOMATCH GOTO DELTEN
   ON MATCH CONTINUE
   NEXT TUTS
     ON NONEXT GOTO DELNEXT
     ON NEXT CRTFORM LINE 1
```

```
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":    DELETING TENSILE PROPERTIES FOR REFERENCE - <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
": TUBE NUMBER: <D.NUMBER <75 :"
": DISTANCE FROM INLET: <D.N_DISTANCE - <D.F_DISTANCE <75 :"
": CLOCK POSITION: <D.CLOCK1 - <D.CLOCK2 <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                             =    THE FOLLOWING FIELDS WILL BE DELETED  :"
": U.T.S: <25 <D.TUTS <75 :"
": YIELD STRENGTH: <25 <D.TYS <75 :"
": REDUCTION IN AREA: <25 <D.RA <75 :"
": ELONGATION: UNIFORM -  <25 <D.EU <75 :"
":             TOTAL   -  <25 <D.ET <75 :"
": FRACTURE STRAIN: LONGITUDINAL - <38 <D.FSL <75 :"
":                  RADIAL - <38 <D.FSR <75 :"
":                                                                        :"
":                  D - DELETE SEGMENT       IMMMMM;                      :"
":                  C - CHOOSE NEW OPTION    :<ACTION   :      <75 :"
":                  X - TO EXIT              HMMMMM<                      :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF ACTION EQ 'X' THEN GOTO EXIT
        ELSE IF ACTION NE 'D' THEN GOTO DELNEXT;
 MATCH TUTS
    ON NOMATCH TYPE "ERROR IN FINDING TENSILE PROPERTIES BEGIN AGAIN"
    ON NOMATCH GOTO DELTEN
    ON MATCH DELETE TUTS
  GOTO DELNEXT
 ENDCASE
******************************************************************************
* THIS CASE ALLOWS THE CHEMICAL PROPERTIES TO BE DELETED. THE CURRENT VALUES *
* ARE DISPLAYED AND CAN BE DELETED AS DESIRED.                               *
******************************************************************************
CASE DELCHEM
CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":    DELETING CHEMICAL PROPERTIES FOR REFERENCE - <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                        :"
":        IN ORDER TO LOCATE THE CORRECT CHEMICAL PROPERTIES SEGMENT      :"
":   PLEASE ENTER THE FOLLOWING KEY FIELDS ASSOCIATED WITH THE DATA TO    :"
":   BE DELETED.                                                          :"
":                                                                        :"
":                                                                        :"
":                                                                        :"
": TUBE NUMBER: <NUMBER <75 :"
": DISTANCE FROM INLET: <N_DISTANCE - <F_DISTANCE <75 :"
": CLOCK POSITION: <CLOCK1 - <CLOCK2 <75 :"
":                                                                        :"
":                                                                        :"
":                                                                        :"
":                  C - CONTINUE             IMMMMM;                      :"
":                  X - TO EXIT              :<ACTION   :      <75 :"
":                                           HMMMMM<                      :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
IF ACTION EQ 'X' THEN GOTO EXIT;
 MATCH NUMBER ND FD CLOCK1
  ON NOMATCH TYPE " ERROR MATCHING KEYFIELDS: PLEASE RE-ENTER"
  ON NOMATCH GOTO DELCHEM
```

```
   ON MATCH CONTINUE
  NEXT HYD_CONC
   ON NONEXT GOTO DELNEXT
   ON NEXT CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":    DELETING CHEMICAL PROPERTIES FOR REFERENCE - <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
": TUBE NUMBER: <D.NUMBER <75 :"
": DISTANCE FROM INLET: <D.N_DISTANCE - <D.F_DISTANCE <75 :"
": CLOCK POSITION: <D.CLOCK1 - <D.CLOCK2 <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":              THE FOLLOWING ARE THE CHEMICAL PROPERTIES RELATED       :"
":         TO THE ABOVE SPECIMEN. THE FIELDS BELOW WILL BE DELETED.     :"
":                                                                      :"
":  HYDROGEN CONCENTRATION: <35 <D.HC <75 :"
":  HYDROGEN DISTRIBUTION: <35 <D.HCC <75 :"
":                                                                      :"
":           ENTER AN OPTION BELOW:                                     :"
":                                                                      :"
":                D - DELETE SEGMENT       IMMMMM;                      :"
":                C - CHOOSE NEW OPTION    :<ACTION   :     <75 :"
":                X - TO EXIT              HMMMMM<                      :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF ACTION EQ 'X' THEN GOTO EXIT
      ELSE IF ACTION NE 'D' THEN GOTO DELNEXT;
 MATCH HC
 ON NOMATCH TYPE "ERROR MATCHING KEYFIELDS, PLEASE BEGIN AGAIN"
 ON NOMATCH GOTO DELCHEM
 ON MATCH DELETE HC
  GOTO DELNEXT
 ENDCASE
 **************************************************************************
 * THIS CASE ALLOWS THE DELETION OF THE FRACTURE PROPERTIES. THE CURRENT  *
 *  VALUES ARE DISPLAYED AND CAN BE DELETED AS DESIRED.                   *
 **************************************************************************
 CASE DELFRAC
CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":   DELETING FRACTURE PROPERTIES FOR REFERENCE - <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                      :"
":       IN ORDER TO LOCATE THE CORRECT FRACTURE PROPERTIES SEGMENT     :"
":  PLEASE ENTER THE FOLLOWING KEY FIELDS ASSOCIATED WITH THE DATA TO    :"
":  BE DELETED.  *** NOTE THAT DELETION OF THE FRACTURE PROPERTIES      :"
":  LEADS TO DELETION OF THE ASSOCIATED J VS DELTA-A TABLE.             :"
":                                                                      :"
":                                                                      :"
": TUBE NUMBER: <NUMBER <75 :"
": DISTANCE FROM INLET: <N_DISTANCE - <F_DISTANCE <75 :"
": CLOCK POSITION: <CLOCK1 - <CLOCK2 <75 :"
":                                                                      :"
":                                                                      :"
":                                                                      :"
":                C - CONTINUE             IMMMMM;                      :"
":                X - TO EXIT              :<ACTION   :     <75 :"
":                                         HMMMMM<                      :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF ACTION EQ 'X' THEN GOTO EXIT;
```

```
   MATCH NUMBER ND FD CLOCK1
    ON NOMATCH TYPE " ERROR MATCHING KEYFIELDS: PLEASE RE-ENTER"
    ON NOMATCH GOTO DELFRAC
    ON MATCH CONTINUE
    NEXT JI
     ON NONEXT GOTO DELNEXT
     ON NEXT CRTFORM LINE 1
 "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 ":    DELETING FRACTURE PROPERTIES FOR REFERENCE - <.F.D.REF <75 :"
 "LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
 ": TUBE NUMBER: <D.NUMBER <75 :"
 ": DISTANCE FROM INLET: <D.N_DISTANCE - <D.F_DISTANCE <75 :"
 ": CLOCK POSITION: <D.CLOCK1 - <D.CLOCK2 <75 :"
 "LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
 ":                                                                         :"
 ":           THE FOLLOWING ARE THE FRACTURE PROPERTIES FOR THE ABOVE      :"
 ":  SPECIMEN.THE FIELDS BELOW (AND J VS DA TABLE)  WILL BE DELETED.       :"
 ":                                                                         :"
 ":      JI: <20 <D.HC <75 :"
 ":      TO: <20 <D.HCC <75 :"
 ":      CCL: <20 <D.CCL <75 :"
 ":                                                                         :"
 ":                   D - DELETE SEGMENT       IMMMMM;                      :"
 ":                   C - CHOOSE NEW OPTION    :<ACTION   :      <75 :"
 ":                   X - TO EXIT              HMMMMM<                      :"
 ":                                                                         :"
 "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  IF ACTION EQ 'X' THEN GOTO EXIT
             ELSE IF ACTION NE 'D' THEN GOTO DELNEXT;
   MATCH JI
      ON NOMATCH TYPE "ERROR IN MATCHING KEYFIELDS - BEGIN AGAIN"
      ON NOMATCH GOTO DELFRAC
      ON MATCH DELETE JI
   GOTO DELNEXT
  ENDCASE
    DATA VIA FIDEL
    END
 -RUN
```

```
***************************************************************************
*                                                                         *
*                              PROPIN.FEX                                 *
*                                                                         *
***************************************************************************
*                                                                         *
*  THIS ROUTINE INPUTS NEW RECORDS INTO THE PRESSURE TUBE PROPERTIES DATABASE *
*   THE USER IS PROMPTED AS TO WHICH FIELDS TO FILL IN!                   *
*                                                                         *
***************************************************************************
*                                                                         *
*                     PROGRAM WRITTEN BY JAMES LIZOTTE                    *
*                               JUNE 1986                                 *
*                                                                         *
***************************************************************************
 MODIFY FILE P
  COMPUTE
   ACTION/A1=;
  CRTFORM LINE 1
 "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 ":                                                                   :"
 ":            WELCOME TO THE INPUT ROUTINE FOR THE PRESSURE TUBE      :"
 ":                         PROPERTIES DATABASE                        :"
 ":                                                                   :"
 ":             YOU WILL BE PROMPTED AS TO WHEN TO ENTER THE DATA      :"
 ":                                                                   :"
 ":              PLEASE ENTER AN OPTION:                               :"
 ":                                                                   :"
 ":                                                                   :"
 ":                      C - TO CONTINUE     IMMMMM;                   :"
 ":                      X - TO EXIT         :<ACTION   :      <75 :"
 ":                                          HMMMMM<                   :"
 "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
    IF ACTION IS 'X' GOTO EXIT;
    IF ACTION IS 'C' GOTO MATREF;
    GOTO TOP
CASE MATREF
COMPUTE
   REF='&&REF';
    MATCH REF
     ON NOMATCH INCLUDE
     ON NOMATCH/MATCH GOTO TEXTIN
    ENDCASE
 **************************************************************************
  *    THIS CASE INPUTS AN ABSTRACT OR DESCRIPTION OF THE REFERENCE INPUT    *
  *      ABOVE.                                                            *
 **************************************************************************
 CASE TEXTIN
   CRTFORM LINE 1
  "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  "                :               INSTRUCTIONS           :"
  "                :                                      :"
  "                :  USE TAB KEY- TO MOVE AROUND FIELDS  :"
  "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
  "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":      PLEASE ENTER AN ABSTRACT/DESCRIPTION FOR: <.F.D.REF <76 :"
":                                                                    :"
": <ABS1  <76 :"
": <ABS2  <76 :"
": <ABS3 <76 :"
": <ABS4 <76 :"
": <ABS5 <76 :"
":                                                                          :"
":                                                                          :"
":                     M - ENTER MORE TEXT IMMMMM;                          :"
":                     X - TO EXIT         :<ACTION  :       <76 :"
":                     C - TO CONTINUE     HMMMMM<                          :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF ACTION EQ 'X' THEN GOTO EXIT;
 MATCH ABS1
  ON NOMATCH INCLUDE
 INCLUDE
 IF ACTION EQ 'M' THEN GOTO TEXTIN
                  ELSE GOTO TUBEIN;
ENDCASE
*****************************************************************************
*              THIS CASE ENTERS THE TUBE IDENTIFICATION DATA.               *
*****************************************************************************
CASE TUBEIN
  CRTFORM LINE 1
 "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                 :                INSTRUCTIONS         :"
 "                 :                                     :"
 "                 :  USE TAB KEY- TO MOVE AROUND FIELDS  :"
 "                 :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "                 HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":           PLEASE ENTER THE TUBE IDENTIFICATION DATA:                     :"
":                                                                          :"
":                                                                          :"
":                                                                          :"
":                                                                          :"
":   TUBE NUMBER: <NUMBER    <76 :"
":   SPECIMEN ID: <LOCATION  <76 :"
":                                                                          :"
":                                                                          :"
":                                         IMMMMM;                          :"
":                     X - TO EXIT         :<ACTION  :       <76 :"
":                     C - TO CONTINUE     HMMMMM<                          :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF ACTION EQ 'X' THEN GOTO EXIT;
  MATCH NUMBER
    ON MATCH TYPE "TUBE NUMBER PRESENT-CONTINUE"
    ON NOMATCH INCLUDE
    ON MATCH/NOMATCH GOTO LOCIN
ENDCASE
*****************************************************************************
*   THIS CASE PROMPTS THE USER FOR THE ENTRY OF THE TUBE LOCATION DATA.     *
*     THE DATA IS MATCHED ON THE FIRST THREE FIELDS.IF THE FIELDS MATCH     *
*     THE DATA IS REJECTED AND THE USER IS PROMPTED TO RE-ENTER THE DATA,   *
*     ELSE THE DATA IS INCLUDED IN THE DATABASE.                            *
*****************************************************************************
CASE LOCIN
 CRTFORM LINE 1
 "                 IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
```

```
  "                    :                  INSTRUCTIONS              :"
  "                    :                                            :"
  "                    :  USE TAB KEY- TO MOVE AROUND FIELDS        :"
  "                    :  PRESS ENTER WHEN ALL FIELDS ARE FILLED    :"
  "                    HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":          PLEASE ENTER THE TUBE LOCATION DATA:                          :"
":                                                                         :"
":  DISTANCE FROM INLET: <ND  -  <FD <76 :"
":  CLOCK POSITION: (NN:NN)  <CLOCK1 -  <CLOCK2 <76 :"
":  FLUENCE:            <FLUENCE <76 :"
":  TEST TEMPERATURE: <TEMP <76 :"
":  REMARKS:                                                               :"
":  <REMARKS <76 :"
":                                                                         :"
":                                          IMMMMM;                        :"
":                       X - TO EXIT        :<ACTION   :      <76 :"
":                       C - TO CONTINUE    HMMMMM<                        :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF ACTION EQ 'X' THEN GOTO EXIT;
 MATCH ND FD CLOCK1
   ON MATCH TYPE "DISTANCE FROM INLET OR CLOCK POSITION MATCHES. RE-ENTER"
   ON MATCH REJECT
   ON MATCH GOTO LOCIN
   ON NOMATCH INCLUDE
   ON NOMATCH GOTO TENIN
ENDCASE
****************************************************************************
*  THIS CASE ALLOWS THE USER TO ENTER THE TENSILE PROPERTIES DATA. IF THE   *
*   DATA HAS NOT ALREADY BEEN ENTERED. (SINCE THEY ARE UNIQUE SEGMENTS).    *
****************************************************************************
CASE TENIN
  CRTFORM LINE 1
"                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
"                :                INSTRUCTIONS              :"
"                :                                          :"
"                :  USE TAB KEY- TO MOVE AROUND FIELDS      :"
"                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
"IMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMJMMMMMMMMMMMMM;"
":                                                                       :"
":    PLEASE ENTER THE FOLLOWING TENSILE PROPERTIES:                     :"
":                                                                       :"
":    U.T.S: <40 <TUTS <75 :"
":    YIELD STRESS: <40 <TYS <75 :"
":    ELONGATION- UNIFORM: <40 <EU <75 :"
":              - TOTAL:   <40 <ET <75 :"
":    REDUCTION IN AREA: <40 <RA <75 :"
":    FRACTURE STRAIN- LONGITUDINAL: <40 <FSL <75 :"
":                   - RADIAL:       <40 <FSR <75 :"
":                                          IMMMMM;                      :"
":                       X - TO EXIT        :<ACTION   :      <75 :"
":                       C - TO CONTINUE    HMMMMM<                      :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF ACTION EQ 'X' THEN GOTO EXIT;
  MATCH TUTS
   ON NOMATCH INCLUDE
   ON MATCH TYPE " UTS VALUE ALREADY PRESENT"
   ON MATCH/NOMATCH GOTO CHEMIN
```

```
ENDCASE
*****************************************************************************
*  THIS CASE ALLOWS INPUT INTO THE CHEMICAL PROPERTIES SEGMENT.THE DATA IS *
*   ORDERED ON THE FIELD HYDROGEN CONCENTRATION.IF THIS FIELD HAS ALREADY  *
*   BEEN ENTERED THEN THE ROUTINE BRANCHES TO ENTER THE CHEMICAL DATA.     *
*****************************************************************************
CASE CHEMIN
CRTFORM LINE 1
 "                  IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                  :                INSTRUCTIONS         :"
 "                  :                                     :"
 "                  :  USE TAB KEY- TO MOVE AROUND FIELDS :"
 "                  :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "                  HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;
 ":                                                                        :
 ":             PLEASE ENTER THE CHEMICAL PROPERTIES AS PROMPTED:          :
 ":                                                                        :
 ":    HYDROGEN CONCENTRATION: <40 <HC <75 :"
 ":    HYDROGEN DISTRIBUTION (HCC): <40 <HCC <75 :"
 ":                                                                        :
 ":                                                                        :
 ":                     C - TO CONTINUE     IMMMMM;                        :
 ":                     X - TO EXIT         :<ACTION  :      <75 :"
 ":                                         HMMMMM<                        :
 "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<
 IF ACTION EQ 'X' THEN GOTO EXIT;
 MATCH HC
 ON NOMATCH INCLUDE
 ON MATCH TYPE " HC ALREADY PRESENT!"
 ON MATCH/NOMATCH GOTO FRACTIN
 ENDCASE
*****************************************************************************
*  THIS CASE ALLOWS FOR THE ENTRY OF THE FRACTURE PROPERTIES. IF THE KEY  *
*   FIELD (NAMELY JI) MATCHES THEN DATA HAS ALREADY BEEN ENTERED AND THE  *
*   ROUTINE BRANCHES TO THE J VS DA TABLES.                               *
*****************************************************************************
CASE FRACTIN
 CRTFORM LINE 1
 "                  IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                  :                INSTRUCTIONS         :"
 "                  :                                     :"
 "                  :  USE TAB KEY- TO MOVE AROUND FIELDS :"
 "                  :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "                  HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;
 ":                                                                        :
 ":          PLEASE ENTER THE FRACTURE PROPERTIES AS PROMPTED:             :
 ":                                                                        :
 ": <25  JI: <30 <JI <75 :"
 ":  <25 TO: <30 <TO <75 :"
 ":  <25 CCL: <30 <CCL <75 :"
 ":                                                                        :
 ":                                                                        :
 ":                     C - TO CONTINUE     IMMMMM;                        :
 ":                     X - TO EXIT         :<ACTION  :      <75 :"
 ":                                         HMMMMM<                        :
 "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
```

```
   IF ACTION EQ 'X' THEN GOTO EXIT;
   MATCH JI
   ON NOMATCH INCLUDE
   ON MATCH TYPE " JI ALREADY PRESENT!"
   ON MATCH/NOMATCH GOTO RESIN
  ENDCASE
******************************************************************************
*  THIS CASE ENABLES THE ENTRY OF THE J VS DELTA_A TABLE. THE SCREEN WILL     *
*   ACCEPT VALUES UNTIL NO MORE ARE ENTERED.IF A VALUE MATCHES, THE USER IS   *
*   INSTRUCTED TO RE-ENTER THE VALUE OTHERWISE IT IS ACCEPTED INTO THE        *
*   TABLE.                                                                    *
******************************************************************************
CASE RESIN
CRTFORM LINE 1
 "                IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 "                :                INSTRUCTIONS              :"
 "                :                                          :"
 "                :  USE TAB KEY- TO MOVE AROUND FIELDS      :"
 "                :  PRESS ENTER WHEN ALL FIELDS ARE FILLED  :"
 "                HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 ":              PLEASE ENTER VALUES INTO THE J VS DELTA-A TABLE            :"
 ":             (ENTER A BLANK LINE TO RETURN TO START OF PROGRAM)          :"
 "LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
 ":                J                   :                DELTA-A             :"
 "LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
 ":    <16 <J <50 <DELTA_A <74 :"
 ":    <16 <J <50 <DELTA_A <74 :"
 ":    <16 <J <50 <DELTA_A <74 :"
 ":    <16 <J <50 <DELTA_A <74 :"
 ":    <16 <J <50 <DELTA_A <74 :"
 ":    <16 <J <50 <DELTA_A <74 :"
 "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  IF J IS-NOT PRESENT THEN GOTO TOP;
  MATCH J
   ON NOMATCH INCLUDE
   ON MATCH TYPE "J VALUE ALREADY PRESENT: PLEASE RE-ENTER!"
   ON MATCH/NOMATCH GOTO RESIN
  ENDCASE
DATA VIA FIDEL
END
```

```
-***************************************************************************
-*                                                                         *
-*                             PSCAN.FEX                                   *
-*                                                                         *
-***************************************************************************
-*                                                                         *
-*         THIS ROUTINE CONTROLS THE VARIOUS OPTIONS WHEN SCANNING         *
-*      THROUGH THE PRESSURE TUBE DATABASE.                                *
-*                                                                         *
-***************************************************************************
-*                                                                         *
-*                    PROGRAM WRITTEN BY JAMES LIZOTTE                     *
-*                               JULY 1986                                 *
-*                                                                         *
-***************************************************************************
-BEGIN
-SET &BRANCH='           ';
 SET MSG=OFF
-SET &CHOICE =' ';
-SET &ACTION=' ';
-CRTFORM LINE 1
-"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-":            PRESSURE TUBE PROPERTIES DATABASE - BROWSE ROUTINE            :"
-"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
-":                                                                          :"
-":                                                                          :"
-":                                                                          :"
-":       WELCOME TO THE BROWSE ROUTINE FOR THE PRESSURE TUBE PROPERTIES     :"
-":       DATABASE THIS ROUTINE WILL ALLOW YOU TO VIEW THE PROPERTIES DATA.  :"
-":                                                                          :"
-":                                                                          :"
-":                      X - TO EXIT ROUTINE (RETURN TO MENU)                :"
-":                      C - TO CONTINUE BROWSING                            :"
-":                                                                          :"
-":                 ENTER YOUR CHOICE HERE ==> <&CHOICE <76 :"
-"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-IF &CHOICE NE 'X' THEN GOTO START
-                 ELSE GOTO FINIS;
-START
MODIFY FILE P
  COMPUTE
    CHOICE/A1=;
    NUM/I2=0;
    ACTION/A1=;
    GOTO SHOWTEXT
CASE SHOWTEXT
  CRTFORM LINE 1
 "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 ":                                                                          :"
 ":                PLEASE CHOOSE ONE OF THE FOLLOWING OPTIONS;               :"
 ":                (TYPE IN THE LETTER AND PRESS ENTER )                     :"
 ":                                                                          :"
 ":                    ENTER  -  A  -  TO VIEW ABSTRACT                      :"
 ":                    ENTER  -  C  -  TO CONTINUE BROWSING                  :"
 ":                                                                          :"
 ":                               IMMMM;                                     :"
 ":          ENTER OPTION HERE==> :<ACTION <39 : <76 :"
 ":                               HMMMM<                                     :"
```

```
  ":                                                                      :"
  "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   IF ACTION EQ 'C' THEN GOTO EXIT;
   COMPUTE
      REF='&&REF';
   MATCH REF
     ON MATCH GOTO SHOW2
     ON NOMATCH TYPE "ERROR MATCHING REFERENCE, PLEASE BEGIN AGAIN"
     ON NOMATCH GOTO TOP
 ENDCASE
 CASE SHOW2
   NEXT ABS1
     ON NONEXT GOTO EXIT
     ON NEXT CRTFORM LINE 1
  "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  ":                                                                      :"
  ":                  ABSTRACT FOR REFERENCE ==> <.F.D.REF   <76 :"
  ":                                                                      :"
  "LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
  ":                                                                      :"
  ":   <D.ABS1 <76 :"
  ":   <D.ABS2 <76 :"
  ":   <D.ABS3 <76 :"
  ":   <D.ABS4 <76 :"
  ":   <D.ABS5 <76 :"
  ":                                                                      :"
  ":      ENTER AN OPTION BELOW:                                          :"
  ":                        M - TO VIEW MORE ABSTRACT                     :"
  ":                        C - TO CONTINUE SCANING OTHER FIELDS          :"
  ":                            IMMMM;                                    :"
  ":                            :<ACTION : <76 :"
  ":                            HMMMM<                                    :"
  ":                                                                      :"
  "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
   IF ACTION EQ 'C' THEN GOTO EXIT
                 ELSE IF ACTION EQ 'M' THEN GOTO SHOW2;
ENDCASE
DATA VIA FIDEL
END
-RUN
-PSCAN2
-SET &FUNC='           ';
-SET &CHOICE=' ';
-CRTFORM LINE 1
-"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-":           PRESSURE TUBE PROPERTIES DATABASE - BROWSE ROUTINE         :"
-"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
-":                 REFERENCE OPTION CHOSEN - <.F.D.&&REF  <76 :"
-"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
-":                                                                     :"
-":             PLEASE CHOOSE AN OPTION TO CONTINUE :                   :"
-":              (TYPE THE LETTER AND PRESS ENTER)                      :"
-":                                                                     :"
-":              S - TO SEQUENTIALLY VIEW THE DATA                      :"
-":                                                                     :"
-":              R - TO REQUEST SPECIFIC DATA                           :"
-":                                                                     :"
-":              X - TO EXIT ROUTINE (RETURN TO MENU)                   :"
-":                                                                            :"
-":                               IMMMM;                                       :"
-":              SELECT OPTION ==>:<&CHOICE <41 : <76 :"
-":                               HMMMM<                                        :"
-":                                                                            :"
-"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-IF &CHOICE EQ 'X' THEN GOTO EXIT;
-SET &FUNC = DECODE &CHOICE ( S 'EX PBROW'
-                             R 'EX REQ');
&FUNC
-RUN
-GOTO BEGIN
-FINIS
-EXIT
```

```
-SET &FUNC='              ';
-SET &CHOICE=' ';
-CRTFORM LINE 1
-"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-":          PRESSURE TUBE PROPERTIES DATABASE - BROWSE ROUTINE              :"
-"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
-":                                                                           :"
-":             PLEASE CHOOSE AN OPTION TO CONTINUE :                         :"
-":              (TYPE THE LETTER AND PRESS ENTER)                            :"
-":                                                                           :"
-":                                                                           :"
-":               S - TO SEQUENTIALLY VIEW THE DATA                           :"
-":                                                                           :"
-":               R - TO REQUEST SPECIFIC DATA                                :"
-":                                                                           :"
-":                                 IMMMM;                                    :"
-":               SELECT OPTION ==>:<&CHOICE <41 : <76 :"
-":                                 HMMMM<                                    :"
-":                                                                           :"
-"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-SET &FUNC = DECODE &CHOICE ( S 'EX PBROW'
-                             R 'EX REQ');
&FUNC
-RUN
-EXIT
```

```
*****************************************************************************
*                                                                           *
*                              PBROW.FEX                                    *
*                                                                           *
*****************************************************************************
*                                                                           *
*       THIS ROUTINE ALLOWS THE USER TO BROWSE THROUGH THE CONTENTS OF THE  *
*  PRESSURE TUBE PROPERTIES DATABASE. THE CURRENT CONTENTS ARE DISPLAYED    *
*  AND THE USER CAN CHOOSE BRANCHING OPTIONS.                               *
*                                                                           *
*****************************************************************************
*                                                                           *
*                   PROGRAM WRITTEN BY JAMES LIZOTTE                        *
*                              JULY 1986                                    *
*                                                                           *
*****************************************************************************
MODIFY FILE P
 COMPUTE
  ACTION/A1=;
  REF='&&REF';
  MATCH REF
   ON NOMATCH TYPE "ERROR MATCHING REFERENCE - ENDING ROUTINE"
   ON NOMATCH GOTO EXIT
   ON MATCH CRTFORM LINE 1
  "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  ":                                                                         :"
  ":            WELCOME TO THE BROWSE ROUTINE FOR THE PRESSURE TUBE          :"
  ":      PROPERTIES DATABASE. THIS ROUTINE WILL ALLOW THE USER TO BROWSE    :"
  ":      THROUGH THE CONTENTS OF THE DATABASE CORRESPONDING TO THE DATA     :"
  ":      REFERENCE: <.F.D.REF <75 :"
  ":                                                                         :"
  ":            CHOOSE AN OPTION AND PRESS ENTER TO CONTINUE:                :"
  ":                                                                         :"
  ":                                                                         :"
  ":                       C - TO CONTINUE     IMMMMM;                       :"
  ":                       X - TO EXIT         :<ACTION   :      <75 :"
  ":                                           HMMMMM<                       :"
  "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  IF ACTION EQ 'X' THEN GOTO EXIT;
  IF ACTION EQ 'C' THEN GOTO SHOWTUBE
                  ELSE GOTO TOP;
 *****************************************************************************
 *      THIS CASE SHOWS THE NEXT TUBE NUMBER APPEARRING IN THE DATABASE      *
 *****************************************************************************
CASE SHOWTUBE
  NEXT NUMBER
   ON NONEXT CRTFORM LINE 1
   " </10"
   "                     END OF DATA - RETURN TO MENU "
   "                      TO CHOOSE A NEW OPTION"
   " "
   "                      PRESS ENTER TO CONTINUE "
   ON NONEXT GOTO EXIT
   ON NEXT CRTFORM LINE 1
 "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  ":                                                                         :"
  ":             POSITIONAL DATA FOR REFERENCE: <.F.D.REF <75 :"
  ":                                                                         :"
```

```
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                         :"
":            KEYFIELD - TUBE NUMBER:   <D.NUMBER                     <75 :"
":               FIELD - TUBE POSITION: <D.POSITION <75 :"
":                                                                         :"
":                                                                         :"
":           CHOOSE AN OPTION AND PRESS ENTER TO CONTINUE:                 :"
":                                                                         :"
":           S - SPECIMEN LOCATION DATA      IMMMMM;                       :"
":           N - NEXT TUBE NUMBER            :<ACTION   :     <75 :"
":           X - TO EXIT                     HMMMMM<                       :"
":                                                                         :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 IF ACTION EQ 'X' THEN GOTO EXIT
        ELSE IF ACTION EQ 'N' THEN GOTO SHOWTUBE
        ELSE GOTO SHOWSPEC;
 ENDCASE
****************************************************************************
* THIS CASE SHOWS THE NEXT TUBE SPECIMEN DATA OCCURRING IN THE DATABASE.   *
****************************************************************************
CASE SHOWSPEC
 NEXT N_DIST
  ON NONEXT TYPE "TUBE SPECIMENS EXHAUSTED. BRANCHING TO NEXT TUBE NUMBER"
  ON NONEXT GOTO SHOWTUBE
  ON NEXT CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":     SPECIMEN LOCATION DATA FOR TUBE NUMBER: <D.NUMBER <75 :"
":           YOU ARE VIEWING DATA FOR REFERENCE: <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                         :"
":       KEYFIELDS - DISTANCE FROM OUTLET: <D.N_DIST - <D.F_DISTANCE <75 :"
":                   CLOCK POSITION:        <D.CLOCK1 - <D.CLOCK2 <75 :"
":                   FLUENCE:               <D.FLUENCE <75 :"
":                   TEST TEMPERTATURE:     <D.TEMP <75 :"
":                   REMARKS  :  <75 :"
":       <D.REMARKS <75 :"
":                                                                         :"
":           CHOOSE AN OPTION AND PRESS ENTER TO CONTINUE:                 :"
":           T - TENSILE PROPERTIES                                        :"
":           C - CHEMICAL PROPERTIES                                       :"
":           F - FRACTURE PROPERTIES         IMMMMM;                       :"
":           X - TO EXIT                     :<ACTION   :     <75 :"
":           N - NEXT TUBE NUMBER            HMMMMM<                       :"
":           S - NEXT SPECIMEN LOCATION                                    :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
ON NEXT IF ACTION EQ 'X' THEN GOTO EXIT
        ELSE IF ACTION EQ 'T' THEN GOTO SHOWTEN
        ELSE IF ACTION EQ 'C' THEN GOTO SHOWCHEM
        ELSE IF ACTION EQ 'F' THEN GOTO SHOWFRAC
        ELSE IF ACTION EQ 'N' THEN GOTO SHOWTUBE
             ELSE GOTO SHOWSPEC;
ENDCASE
****************************************************************************
* THIS CASE DISPLAYS THE NEXT SET OF TENSILE PROPERTIES IN THE DATABASE.   *
****************************************************************************
CASE SHOWTEN
 NEXT TUTS
  ON NONEXT TYPE "TENSILE PROPERTIES NOT PRESENT BRANCHING TO CHEMICAL "
  ON NONEXT GOTO SHOWCHEM
  ON NEXT CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":     TENSILE PROPERTIES FOR TUBE NUMBER: <D.NUMBER <75 :"
":     TAKEN FROM <D.LOCATION <75 :"
":     DISTANCE FROM INLET: <D.N_DIST - <D.F_DIST <75 :"
":           YOU ARE VIEWING DATA FOR REFERENCE: <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":          FIELDS - U.T.S:                  <D.TUTS    <75 :"
":                   YIELD STRENGTH:         <D.TYS <75 :"
":                   ELONGATION: UNIFORM -   <D.EU    TOTAL-  <D.ET <75 :"
":                   FRACTURE STRAIN: LONG - <D.FSL   RADIAL- <D.FSR <75 :"
":                   REDUCTION IN AREA:      <D.RA <75 :"
":                                                                          :"
":           CHOOSE AN OPTION AND PRESS ENTER TO CONTINUE:                  :"
":                                                                          :"
":           C - CHEMICAL PROPERTIES                                        :"
":           F - FRACTURE PROPERTIES                                        :"
":           N - NEXT TUBE NUMBER            IMMMMM;                        :"
":           S - NEXT SPECIMEN LOCATION      :<ACTION   :       <75 :"
":           X - TO EXIT                     HMMMMM<                        :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 ON NEXT IF ACTION EQ 'X' THEN GOTO EXIT
        ELSE IF ACTION EQ 'N' THEN GOTO SHOWTUBE
             ELSE IF ACTION EQ 'C' THEN GOTO SHOWCHEM
                  ELSE IF ACTION EQ 'F' THEN GOTO SHOWFRAC
                       ELSE GOTO SHOWSPEC;
 ENDCASE
 ****************************************************************************
 * THIS CASE DISPLAYS THE NEXT SET OF CHEMICAL PROPERTIES.                  *
 ****************************************************************************
 CASE SHOWCHEM
  NEXT HYD_CONC
   ON NONEXT TYPE "CHEMICAL SEGMENT NOT PRESENT, BRANCHING TO FRACTURE."
   ON NONEXT GOTO SHOWFRAC
   ON NEXT CRTFORM LINE 1
"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
":     CHEMICAL PROPERTIES FOR TUBE NUMBER: <D.NUMBER <75 :"
":     TAKEN FROM <D.LOCATION <75 :"
":     DISTANCE FROM INLET: <D.N_DIST - <D.F_DIST <75 :"
":           YOU ARE VIEWING DATA FOR REFERENCE: <.F.D.REF <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                          :"
":          FIELDS - HYDROGEN CONCENTRATION: <D.HC      <75 :"
":                     HCC:                  <D.HCC <75 :"
":                                                                          :"
":                                                                          :"
":           CHOOSE AN OPTION AND PRESS ENTER TO CONTINUE:                  :"
":                                                                          :"
":                                                                          :"
":             F - FRACTURE PROPERTTIES                                     :"
":             N - NEXT TUBE NUMBER          IMMMMM;                        :"
":             S - NEXT SPECIMEN LOCATION    :<ACTION   :       <75 :"
":             X - TO EXIT                   HMMMMM<                        :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
 ON NEXT IF ACTION EQ 'X' THEN GOTO EXIT
        ELSE IF ACTION EQ 'N' THEN GOTO SHOWTUBE
             ELSE IF ACTION EQ 'F' THEN GOTO SHOWFRAC
```

```
                    ELSE GOTO SHOWSPEC;
  ENDCASE
********************************************************************************
* THIS CASE DISPLAYS THE NEXT SET OF FRACTURE PROPERTIES.                      *
********************************************************************************
CASE SHOWFRAC
  NEXT JI
   ON NONEXT TYPE "FRACTURE SEGMENT NOT PRESENT,BRANCHING TO NEXT SPECIMEN"
   ON NONEXT GOTO SHOWSPEC
   ON NEXT CRTFORM LINE 1
 "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 ":     FRACTURE PROPERTIES FOR TUBE NUMBER: <D.NUMBER <75 :"
 ":     TAKEN FROM <D.LOCATION <75 :"
 ":     DISTANCE FROM INLET: <D.N_DIST - <D.F_DIST <75 :"
 ":           YOU ARE VIEWING DATA FOR REFERENCE: <.F.D.REF <75 :"
 "LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
 ":          FIELDS - JI:               <D.JI    <75 :"
 ":                   TO:               <D.TO <75 :"
 ":                   CCL:              <D.CCL <75 :"
 ":                                                                            :"
 ":           CHOOSE AN OPTION AND PRESS ENTER TO CONTINUE:                    :"
 ":                                                                            :"
 ":             J - J VS DELTA-A TABLE                                         :"
 ":             N - NEXT TUBE NUMBER             IMMMMM;                       :"
 ":             S - NEXT SPECIMEN LOCATION       :<ACTION   :      <75 :"
 ":             X - TO EXIT                      HMMMMM<                       :"
 "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  ON NEXT IF ACTION EQ 'X' THEN GOTO EXIT
          ELSE IF ACTION EQ 'N' THEN GOTO SHOWTUBE
               ELSE IF ACTION EQ 'J' THEN GOTO SHOWJ
                    ELSE GOTO SHOWSPEC;
  ENDCASE
********************************************************************************
* THIS CASE DISPLAYS THE CONTENTS OF THE J VS DELTA-A TABLE, SEQUENTIALLY      *
********************************************************************************
CASE SHOWJ
 NEXT J
  ON NONEXT TYPE "J VS DELTA-A TABLE EXHAUSTED. BRANCHING TO NEXT SPECIMEN"
  ON NONEXT GOTO SHOWSPEC
  ON NEXT CRTFORM LINE 1
 "IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 ":     J VS DELTA-A TABLE FOR TUBE NUMBER: <D.NUMBER <75 :"
 ":     TAKEN FROM <D.LOCATION <75 :"
 ":     DISTANCE FROM INLET: <D.N_DIST - <D.F_DIST <75 :"
 ":           YOU ARE VIEWING DATA FOR REFERENCE: <.F.D.REF <75 :"
 "LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
 ":                                 :                                          :"
 ":               J                 :              DELTA-A                     :"
 ":                                 :                                          :"
 "LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
 ":             <D.J                                <D.DELTA_A   <75 :"
 ":                                                                            :"
 ":           CHOOSE AN OPTION AND PRESS ENTER TO CONTINUE:                    :"
 ":                                                                            :"
 ":             J - NEXT J VALUE                                               :"
 ":             N - NEXT TUBE NUMBER             IMMMMM;                       :"
 ":             S - NEXT SPECIMEN LOCATION       :<ACTION   :      <75 :"
 ":             X - TO EXIT                      HMMMMM<                       :"
```

```
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
ON NEXT IF ACTION EQ 'X' THEN GOTO EXIT
        ELSE IF ACTION EQ 'J' THEN GOTO SHOWJ
             ELSE IF ACTION EQ 'N' THEN GOTO SHOWTUBE
                  ELSE GOTO SHOWSPEC;
ENDCASE
DATA VIA FIDEL
END
```

```
-****************************************************************************
-*                                                                          *
-*                               REQ.FEX                                    *
-*                                                                          *
-****************************************************************************
-*                                                                          *
-*    THIS ROUTINE ALLOWS THE USER TO REQUEST SPECIFIC FIELDS AND VALUES TO *
-*      VIEW. EXAMPLES AND INSTRUCTIONS ARE GIVEN TO AID THE USER TO GET THE *
-*      MOST OUT OF THIS ROUTINE.                                           *
-*                                                                          *
-****************************************************************************
-*                                                                          *
-*                    PROGRAM WRITTEN BY JAMES LIZOTTE                      *
-*                               JULY 1986                                  *
-*                                                                          *
-****************************************************************************
-DEFAULTS &ECHO=ON;
-SET &BUFF =  &&REF ;
SET PRINT=ONLINE;
-SET &INSTR = ' PRESS --- PF8 ---- FOR HELP ';
-SET &INSTR1 = ' PF7 -- RETURN TO INPUT SCREEN  PF8 -- FURTHER INSTRUCTIONS';
-SET &INSTR2 = ' PF7 -TO RETURN TO OPTIONS SCREEN';
-START
-SET &LINE1 = ' PRINT                                                             ';
-SET &LINE2 = ' IF                                                                ';
-SET &LINE3 = ' END ';
-****************************************************************************
-*                                                                          *
-*     BELOW ARE THE INPUT AND INSTRUCTION SCREENS USED TO ASSEMBLE THE     *
-*       USER DEFINED ROUTINE.                                              *
-*                                                                          *
-****************************************************************************
-CRTFORM LINE 1
-"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-":            PRESSURE TUBE PROPERTIES DATABASE - BROWSE ROUTINE           :"
-":                                                                         :"
-":                  REFERENCE OPTION CHOSEN - <.F.D.&&REF <76 :"
-"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
-":                                                                         :"
-": YOU MAY NOW CHOOSE TO VIEW ANY FIELD ACCORDING TO THE CONDITIONS WHICH  :"
-":  YOU MAY WISH TO INPUT!                                                 :"
-":                                                                         :"
-":                             EXAMPLE:                                    :"
-":             (FIELDS TO VIEW) ==>       PRINT JI AND TO                  :"
-":        (VIEWING CONDITIONS) ==>        IF CCL GT 25                     :"
-":                                                                         :"
-":         ENTER YOUR CHOICE:                                              :"
-":                                                                         :"
-": <.I.T.&LINE1 <76 :"
-": <.I.T.&LINE2 <76 :"
-":                                                                         :"
-"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-"    <22 <.I.D.&INSTR"
-"-------------------------+-------------------+---------------------------"
-"     FIELD NAME          |     USE ALIAS     |   CONDITIONAL OPERATORS "
-"-------------------------+-------------------+---------------------------"
-"  TUBE NUMBER            |   NUMBER          |         GREATER THAN  GT"
-"  POSITION               |   LOCATION        |         LESS THAN     LT"
-"  DISTANCE FROM INLET      |    ND,FD              | GREATER THAN EQUAL TO GE"
-"  CLOCK POSITION           |    CLOCK1,CLOCK2      | LESS THAN EQUAL TO    LE"
-"  TEST TEMPERATURE         |    TEMP               | EQUAL TO              EQ"
-"  REMARKS                  |    REMARKS            | NOT EQUAL TO          NE"
-"  U.T.S.                   |    TUTS               | AND  "
-"  YIELD STRESS             |    TYS                | OR "
-"  ELONGATION -UNIFORM      |    EU                 | NOT "
-"              -TOTAL       |    ET                 | CONTAINS \_ CHARACTER"
-"  FRACTURE STRAIN-LONG.    |    FSL                | OMITS    /    DATA"
-"                  RADIAL   |    FSR                |"
-"  JI,TO,CCL                |    JI,TO,CCL          |"
-"  HYDROGEN CONCENT.        |    HC                 |"
-"  HYDROGEN DISTRIBUTION    |    HCC                |"
-"   J, DELTA-A              |    J, DA              |"
-" <10 <.I.D.&INSTR1"
-" *  YOU MAY WISH TO OMIT THE CONDITION TESTING. TO DO THIS SIMPLY   "
-"      BLANK OUT THE 'IF' IN THE SECOND LINE   "
-"   "
-"      EXAMPLE:    PRINT J AND DA AND CCL   "
-"   "
-" *  YOU MAY ALSO PRINT VALUES AS A FUNCTION OF OTHER VALUES BY USING   "
-"      THE 'BY' KEYWORD.   "
-"    "
-"      EXAMPLE:    PRINT J AND DA BY JI   "
-"                  IF TEMP GE 0   "
-"      "
-"  * THE REPORTS GENERATED BY THIS ROUTINE WILL APPEAR ONE SCREEN AT A TIME  "
-"      SIMPLY PRESS RETURN CONTINUALLY TO BROWSE THROUGH THE REPORT.         "
-"      TO REVIEW DATA YOU MAY USE THE PF8 FOR PAGE DOWN   "
-"                                     OR PF7 FOR PAGE UP   "
-"    "
-"  *  USE THE TAB KEY AND CURSOR ARROW KEYS TO MOVE ALONG THE INPUT SCREEN   "
-"       FIELDS. PRESS ENTER WHEN THE FIELDS ARE FILLED.   "
-"     "
-"    <18 <.I.D.&INSTR2"
-*****************************************************************************
-*                                                                           *
-*  THIS IS WHERE THE USER DEFINED ROUTINE WILL BE ASSEMBLED AND EXECUTED.   *
-*                                                                           *
-*****************************************************************************
******************************************************************************
*                 THIS IS A LISTING OF THE COMPLETED REQUEST!                *
******************************************************************************
TABLE FILE P
HEADING CENTER
" DATA VALUES FOR REFERENCE ==> &BUFF"
&LINE1
&LINE2
IF REF EQ '&&REF'
&LINE3
-RUN
-SET &NEW1='                          ';
-SET &CHOICE= ' ';
-CRTFORM LINE 1
-"</8"
-"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-":                                                                 :"
-":          DO YOU WANT A HARDCOPY OF THE REPORT PREVIOUSLY VIEWED?   :"
-":                     ENTER (Y/N)==> <&CHOICE <72 :"
-":                                                                       :"
-"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-IF &CHOICE EQ 'Y' THEN GOTO INIT
-                  ELSE GOTO NEXLINE;
-INIT
-SET &NEW1='SET PRINT=OFFLINE;';
&NEW1
TABLE FILE P
HEADING CENTER
" DATA VALUES FOR REFERENCE ==> &BUFF"
&LINE1
&LINE2
IF REF EQ '&&REF'
&LINE3
-RUN
-NEXLINE
SET PRINT=ONLINE;
-SET &CHOICE=' ';
-CRTFORM LINE 1
-"</8"
-"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-":                                                                           :"
-":                  DO YOU WISH TO ENTER ANOTHER REQUEST?                    :"
-":                      ENTER (Y/N): ==>  <&CHOICE <76 :"
-":                                                                           :"
-"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-IF &CHOICE EQ 'Y' THEN GOTO START;
-EXIT
```

```
********************************************************************************
*                                                                              *
*                                PBACKUP.FEX                                   *
*                                                                              *
********************************************************************************
* THIS PROGRAM PERFORMS A BACKUP OF THE PRESSURE TUBE PROPERTIES DATBASE.THE  *
*   BACKUP IS TO PROVIDE DATA SECURITY WHILE MAINTAINING DATA INTEGRITY.       *
********************************************************************************
*                                                                              *
*                       PROGRAM WRITTEN BY JAMES LIZOTTE                       *
*                                  JULY 1986                                   *
*                                                                              *
********************************************************************************
-BACK
-SET &ACTION=' ';
-CRTFORM LINE 1
-"    IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-"    :                                                                    : "
-"    :                  WELCOME TO THE  BACKUP PROCEDURE                  :"
-"    :               FOR THE PRESSURE TUBE PROPERTIES DATABASE.           :"
-"    :                                                                    : "
-"    :               PLEASE INSERT BACKUP DISK INTO DRIVE B:              :"
-"    :                                                                    : "
-"    :                   ENTER - B - TO CONTINUE BACKUP PROCEDURE         :"
-"    :                   ENTER - X - TO EXIT TO MAINMENU                  :"
-"    :                                                                    :"
-"    :                      ENTER OPTION: <&ACTION     <73 :"
-"    :                                                                    :"
-"    HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-IF &ACTION EQ 'X' THEN GOTO EXIT;
-IF &ACTION NE 'B' THEN GOTO BACK;
DOS COPY P.MAS  B:\
DOS COPY P.FOC  B:\
-EXIT
END
```

```
********************************************************************************
*                                                                              *
*                                PRECOV.FEX                                    *
*                                                                              *
********************************************************************************
* THIS PROGRAM LOADS THE DATABASE INTO THE PC FROM A BACKUP DISKETTE. THIS    *
*   ROUTINE IS PROVIDED AS A PRECAUTION IN CASE OF ACCIDENTAL LOSS OF THE     *
*   PRESSURE TUBE PROPERTIES DATABASE.                                        *
********************************************************************************
*                                                                              *
*                       PROGRAM WRITTEN BY JAMES LIZOTTE                       *
*                                 JULY 1986                                    *
*                                                                              *
********************************************************************************
-RECOVER
-SET &ACTION=' ';
-CRTFORM LINE 1
-"     IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-"     :                                                                : "
-"     :                WELCOME TO THE RECOVERY PROCEDURE              :"
-"     :            FOR THE PRESSURE TUBE PROPERTIES DATABASE.         :"
-"     :                                                                :"
-"     :       THIS ROUTINE ENABLES THE RECOVERY OF THE LATEST BACKUP  :"
-"     :         COPY OF THE PROPERTIES DATABASE STORED ON A FLOPPY DISK. :"
-"     :                                                                : "
-"     :              PLEASE INSERT BACKUP DISK INTO DRIVE A:          :"
-"     :                                                                : "
-"     :                ENTER -R- TO CONTINUE RECOVERY PROCEDURE       :"
-"     :                ENTER -X- TO EXIT TO MAINMENU                  :"
-"     :                                                                :"
-"     :                    ENTER CHOICE<&ACTION  <73 :"
-"     :                                                                :"
-"     HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-IF &ACTION EQ 'X' THEN GOTO EXIT;
-IF &ACTION NE 'R' THEN GOTO RECOVER;
DOS COPY A:P.MAS  C:P.MAS
DOS COPY A:P.FOC  C:P.FOC
-EXIT
END
```

```
*********************************************************************************
*                                                                               *
*                                  PMOVE.FEX                                    *
*                                                                               *
*********************************************************************************
*    THIS PROGRAM ALLOWS THE USER TO LOAD THE PRESSURE TUBE PROPERTIES         *
*     DATABASE AND APPLICATIONS ONTO A FLOPPY FOR SUBSEQUENT LOADING ONTO       *
*     ANOTHER PC.(WHICH SUPPORTS PC/FOCUS.)                                     *
*********************************************************************************
*                                                                               *
*                       PROGRAM WRITTEN BY JAMES LIZOTTE                        *
*                                 JULY 1986                                     *
*                                                                               *
*********************************************************************************
-START
-SET &ACTION=' ';
-CRTFORM LINE 1
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-" :                    WELCOME TO THE MOVING PROCEDURE                  :"
-" :                    DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD                  :"
-" :                                                                     :"
-" :         THIS PROCEDURE WILL ALLOW YOU TO LOAD THE PRESSURE TUBE     :"
-" :          PROPERTIES DATABASE AND SUPPORT ROUTINES ONTO A FLOPPY WHICH :"
-" :          CAN THEN BE LOADED ONTO ANOTHER PC (EQUIPPED WITH PC/FOCUS) :"
-" :          AND USED FREELY.                                           :"
-" :                                                                     :"
-" :           IF YOU WISH TO CONTINUE: 1)  TURN THE PRINTER ON (ONLINE)  :"
-" :                                    2)  INSERT A FLOPPY DISK INTO DRIVE B :"
-" :                                    3)  ENTER THE DESIRED CHOICE BELOW :"
-" :                                                                     :"
-" :                 ENTER - M - TO CONTINUE THE MOVE PROCEDURE.         :"
-" :                 ENTER - X - TO EXIT TO MAINMENU.                    :"
-" :                         CHOICE: <&ACTION  <75 :"
-" :                                                                     :"
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-IF &ACTION EQ 'X' THEN GOTO EXIT;
-IF &ACTION NE 'M' THEN GOTO START;
DOS COPY P.MAS B:\
DOS COPY P.FOC B:\
-RUN
-PART2
-CRTFORM LINE 1
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-" :                                                                     :"
-" :                                                                     :"
-" :                                                                     :"
-" :           PLEASE INSERT A NEW FORMATTED DISK INTO DRIVE B:          :"
-" :                                                                     :"
-" :           (MARK THE DISK YOU REMOVE AS THE DATA BASE DISK)          :"
-" :                                                                     :"
-" :                                                                     :"
-" :                                                                     :"
-" :                                                                     :"
-" :                                                                     :"
-" :                                                                     :"
-" :                 PRESS ENTER WHEN NEW DISK INSERTED!                 :"
-" :                                                                     :"
-" :                                                                     :"
-" :                                                                              :"
-" :                                                                              :"
-" :                                                                              :"
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
DOS COPY PROPMENU.FEX B:\
DOS COPY CHOOSREF.FEX B:\
DOS COPY REFTABLE.FEX B:\
DOS COPY PROPROF.FEX B:\
DOS COPY PUPDATE.FEX B:\
DOS COPY DELETEP.FEX B:\
DOS COPY PIN.FEX B:\
DOS COPY SCAN.FEX B:\
DOS COPY SCAN2.FEX B:\
DOS COPY PBROW.FEX B:\
DOS COPY REQ.FEX B:\
DOS COPY PBACKUP.FEX B:\
DOS COPY PRECOV.FEX B:\
DOS COPY PMOVE.FEX  B:\
DOS COPY PMOVIN.DAT B:\
-RUN
-CRTFORM LINE 1
-" </10"
-"                    HIT CTRL-PRTSC  AND THEN HIT ENTER"
-"                       FOR A COPY OF THE INSTRUCTIONS"
DOS TYPE PMOVIN.DAT
-RUN
-CRTFORM LINE 1
-"</10"
-"                    INSTRUCTIONS ARE BEING PRINTED"
-"             HIT CTRL-PRTSC AND THEN HIT ENTER ONCE AGAIN"
-EXIT
```

```
**************************
* J.LIZOTTE JUNE 1986    *
********************************************************************************
********************************************************************************

           INSTRUCTIONS TO MOVE PRESSURE TUBE PROPERTIES DATABASE
                          AND SUPPORT APPLICATIONS

********************************************************************************
********************************************************************************


     PLEASE RETAIN THESE INSTRUCTIONS TO AID YOU IN LOADING THE PRESSURE TUBE
     PROPERTIES DATABASE AND SUPPORT APPLICATIONS ONTO ANOTHER PC.
                (PROVIDED IT HAS HAD PC/FOCUS INSTALLED).


    YOU WILL NEED :
   *****************



                 1) THE FLOPPY DISKS PRODUCED BY THIS ROUTINE.

                 2) THE PC/FOCUS ACTIVATOR DISK.

                 3) THIS LIST OF INSTRUCTIONS.


    PROCEDURE
  ****************
                 1) ASSUMING MACHINE HAS BEEN TURNED ON, . .

                 2) (IF REQUIRED ,LOAD DOS INTO MACHINE)

                 3) INSERT THE DATA BASE DISK INTO DRIVE A.

                 4) ISSUE THE COMMAND . . COPY A:\ C:\ . .THEN PRESS ENTER

                 5) INSERT APPLICATIONS DISK INTO DRIVE A.

                 6) ISSUE THE COMMAND . . COPY A:\ C:\ . . THEN PRESS ENTER

                 7) ISSUE THE COMMAND . RENAME PROPROF.FEX PROFILE.FEX

                 8) YOU CAN NOW USE THE PC/FOCUS ACTIVATOR DISK TO ENTER
                     PC/FOCUS AND USE THE PRESSURE TUBE PROPERTIES DATABASE
                     AND SUPPORT APPLICATIONS.

       *** NOTE STEPS 3-7 ARE TO BE COMPLETED ONLY ONCE. YOU CAN THEN USE
          THE APPLICATIONS EVERY TIME YOU ENTER PC/FOCUS.

********************************************************************************
********************************************************************************
```

PRESSURE TUBE DATA BASE

```
SECTION 01.01
             STRUCTURE OF FOCUS    FILE FTUBE    ON 07/23/86 AT 12.4
         INGOT
 01      S1
**************
*INGOT_NO    **
*HARDNESS1   **
*HARDNESS2   **
*HARDNESS3   **
*            **
***************
 **************
       I
       +-----------------+
       I                 I
       I ANALYSIS        I TUBE
 02    I U         03    I S2
**************    **************
*FIRST_TUBENB*    *TUBE_NO     **
*FIRST_TUBEO *    *POSITION    **
*FIRST_TUBEN *    *BILLET_POS  **
*FIRST_TUBEH *    *TUBECOLDWORK**
*            *    *            **
**************    ***************
                   **************
```

```
FILE PT, SUFFIX=FOC, $
 SEGNAME=INGOT, SEGTYPE=S1, $
  FIELD=INGOT_NO, I_NUM, A8, $
  FIELD=HARDNESS1, HARD1, I4,  $
  FIELD=HARDNESS2, HARD2, I4,  $
  FIELD=HARDNESS3, HARD3, I4,  $
  FIELD=AVE_HARDNESS, HARDA, I4,  $
  FIELD=TOP_INGOT_NB, TIN_NB, F5.3,  $
  FIELD=MID_INGOT_NB, MIN_NB, F5.3,  $
  FIELD=BOT_INGOT_NB, BIN_NB, F5.3,  $
  FIELD=TOP_INGOT_O, TIN_O, I5,  $
  FIELD=MID_INGOT_O, MIN_O, I5,  $
  FIELD=BOT_INGOT_O, BIN_O, I5,  $
  FIELD=TOP_INGOT_N, TIN_N, I3,  $
  FIELD=MID_INGOT_N, MIN_N, I3,  $
  FIELD=BOT_INGOT_N, BIN_N, I3,  $
  FIELD=TOP_INGOT_H, TIN_H, I3,  $
  FIELD=MID_INGOT_H, MIN_H, I3,  $
  FIELD=BOT_INGOT_H, BIN_H, I3,  $
  FIELD=DATE, BATCH_DATE, A13, $
 SEGNAME=ANALYSIS, SEGTYPE=U, PARENT=INGOT, $
  FIELD=FIRST_TUBENB, TUBE_NB1, F4.2,  $
  FIELD=FIRST_TUBEO, TUBE_O1, I5,  $
  FIELD=FIRST_TUBEN, TUBE_N1, I3,  $
  FIELD=FIRST_TUBEH, TUBE_H1, I3,  $
  FIELD=SECND_TUBENB, TUBE_NB2, F4.2,  $
  FIELD=SECND_TUBEO, TUBE_O2, I5,  $
  FIELD=SECND_TUBEN, TUBE_N2, I3,  $
  FIELD=SECND_TUBEH, TUBE_H2, I3,  $
 SEGMENT=TUBE, SEGTYPE=S2, PARENT=INGOT, $
  FIELD=TUBE_NO, NUMBER, A8,  $
  FIELD=POSITION, LOCATION, A6, $
  FIELD=BILLET_POS, , A4,  $
  FIELD=TUBECOLDWORK, TCW, F5.2,  $
  FIELD=YIELD_STRESS, YS, F5.2,  $
  FIELD=U.T.S., UTS, F5.2,  $
  FIELD=ELONG, , F5.2,  $
  FIELD=CS_WT_GAIN, CORROS_SAMP, I3,  $
  FIELD=TUBE_HARD_FR, THFE, F5.2,  $
  FIELD=TUBE_HARD_BA, THBE, F5.2,  $
  FIELD=TUBE_WEIGHT, TUBE_WT, F7.3,  $
  FIELD=STRAIGHTNESS,  , F6.4,  $
  FIELD=RESIST_FR, RFE, F5.2,  $
  FIELD=RESIST_BA, RBE, F5.2,  $
  FIELD=BODY_TH_MAX, BTMAX, F7.5,  $
  FIELD=BODY_TH_MIN, BTMIN, F7.5,  $
  FIELD=NEND_TH_MAX, NTMAX, F7.5,  $
  FIELD=NEND_TH_MIN, NTMIN, F7.5,  $
  FIELD=PEND_TH_MAX, PTMAX, F7.5,  $
  FIELD=PEND_TH_MIN, PTMIN, F7.5,  $
  FIELD=OVAL_NO_MIN, NOMIN, F7.5,  $
  FIELD=OVAL_NO_MAX, NOMAX, F7.5,  $
  FIELD=OVAL_PL_MIN, POMIN, F7.5,  $
  FIELD=OVAL_PL_MAX, POMAX, F7.5,  $
```

```
FIELD=TUBE_OD_NO, TOD1, F7.5,  $
FIELD=TUBE_OD_PL, TOD2, F7.5,  $
FIELD=CHANGE, DELTA_L, F8.6,  $
FIELD=COMMENTS, REMARKS, A41, $
```

PRESSURE TUBE DATA BASE APPLICATION ROUTINES

Presented below is a listing of the routines for the pressure tube data base. It is important to note that when viewing hardcopies of the routines , some of the special characters which are supported in focus draw mode are not recognized on the printer. This explains many of the characters which seem to form borders around the input areas. These are actually borders on the crt output.

	ROUTINE NAME	PAGE NUMBER
	PTINPUT.FEX	179
	PREMOVE.FEX	183
	PMOVE.MAS	187
	PTRANS.FEX	189
	PBROWSE.FEX	194
	PTREC.FEX	196
	PTADDSEG.FEX	197
	PTDELSEG.FEX	200
	PTUPDAT.FEX	201
	PINGUP.FEX	203
	PSHOW.FEX	205
	PGRAPH.FEX	207
	PGRAPH1.FEX	208
	PGRAPH2.FEX	209
	PGRAPH3.FEX	210
	PGRAPH4.FEX	211
	PMENU.FEX	212
	PTBACREC.FEX	214
	PTBACK.FEX	215
	PTPROF.FEX	216
	PTMOVE.FEX	218
TEXT FILE -	PTMOVIN.DAT	220

```
*********************************************************************
*                                                                   *
*                          PTINPUT.FEX                              *
*                                                                   *
*********************************************************************
* THIS ROUTINE INPUTS DATA INTO THE PRESSURE TUBE DATA BASE *
* THE ROUTINE CHECKS FOR ERRORS IN THE POSITION FIELD, AND BY DEFAULT
* CHECKS ALL FIELDS FOR APPROPRIATE ALPHANUMERIC OR NUMERIC INPUT.  ON
* FINDING AN ERROR, THE CURRENT SCREEN IS REJECTED, AND THE OPERATOR HAS
* A CHANCE TO REENTER THE FIELDS.
*   THE ROUTINE CORRESPONDS DIRECTLY TO THE ROUTINE 'EASYIN' WITH THE ONLY
* DIFFERENCE BEING THE SOURCE OF INPUT.  THIS ROUTINE USES MENU SCREENS
* ONLY FOR INPUT OF THE PRESSURE TUBE DATA, WHILE 'EASYIN' USES BOTH MENU
* SCREENS AND DATA FROM DATA FILES CONTAINING PRESSURE TUBE DATA.
*
*                     WRITTEN BY ZINTIS PERKONS, AUG, 1985.*
MODIFY FILE PTUBE
 CRTFORM  LINE 1
  "                 INPUTING PRESSURE TUBE DATA       (   PF8 FOR     ) "
  "                    ENTER INGOT DATA FIRST         ( INSTRUCTIONS ) "
  " "
  " INGOT NO. :  <INGOT_NO "
  " "
  "                          ONE   : <HARD1"
  " INGOT HARDNESS  ===>  TWO   : <HARD2"
  "    (B.H.N.)              THREE : <HARD3"
  "    3,000 KG "
  "                          AVE   : <AVE  "
  "  "
  "  "
  "                          INGOT ANALYSIS                       "
  "               NB %          O          N           H    "
  "              ------       ------     ------      ------ "
  " TOP  :      <TIN_NB      <TIN_O     <TIN_N      <TIN_H "
  " MID  :      <MIN_NB      <MIN_O     <MIN_N      <MIN_H "
  " BOT  :      <BIN_NB      <BIN_O     <BIN_N      <BIN_H "
  "  "
  "             EXTRUSION DATE : <DATE"
  "                              INSTRUCTIONS"
  "                              -------------"
  "  "
  "                PF2  KEY TO CANCEL ENTRY"
  "                PF3  KEY TO QUIT PROCEDURE COMPLETELY"
  "                PF7  KEY TO GO BACK TO DATA ENTERY SCREEN"
  "  "
  "        =====>  ENTER ALL AVAILABLE DATA WHERE PROMPTED "
  "             -  ENTER '.'  I.E. PERIOD,  WHEN DATA NOT AVAILABLE"
  "             -  WHEN COMPLETE, CHECK FOR ERRORS AND MAKE CORRECTIONS"
  "             -  THEN PRESS 'ENTER' TO ACCEPT DATA"
  "             -  TYPE 'END' IN TOP FIELD TO ACCEPT AND TERMINATE SESSION"
  "  "
  "  "
  "                (TAB)  KEY  ..... MOVES FORWARD AROUND SCREEN"
  "          (NUMBER PAD)  KEYS ..... MOVE FROM FIELD TO FIELD IN DESIRED"
```

```
   "                                DIRECTION"
   " "
   "   IF YOU  ARE HAVING PROBLEMS WITH THIS SCREEN, CONSULT "
   "   FOCUS USERS MANUAL, CHAPTER 12; 'FIDEL'              "
 MATCH INGOT_NO
*
* AFTER ENTERING FIRST SET OF DATA, CHECK FOR A UNIQUE INGOT NUMBER AND,
* REJECT AND RETRY IF A DUPLICATE IS ENTERED, OTHERWISE INCLUDE THIS DATA
* AND PROMPT FOR MORE INFORMATION
*
  ON MATCH TYPE
   "            INGOT NUMBER MATCHES ONE ALREADY IN DATABASE"
   "                 -CHECK AND REENTER"
  ON MATCH REJECT
  ON NOMATCH INCLUDE
  ON NOMATCH GOTO COMPO
CASE COMPO
*
* THIS CASE PROMPTS FOR THE TUBE ANALYSIS DONE ON THE FIRST AND LAST
* TUBES FOR EACH INGOT.
*
 COMPUTE
   INGOT_NO=INGOT_NO;
 CRTFORM LINE 1
   " "
   "                          TUBE ANALYSIS  (PPM)"
   " "
   "                 NB %        O         N         H    "
   "               ------     ------    ------    ------ "
   " FIRST TUBE : <TUBE_NB1      <TUBE_O1      <TUBE_N1      <TUBE_H1"
   " "
   "  LAST TUBE : <TUBE_NB2      <TUBE_O2      <TUBE_N2      <TUBE_H2"
   "</3"
   " <35 PRESS ENTER TO CONTINUE"
 MATCH INGOT_NO
   ON MATCH CONTINUE TO FIRST_TUBENB
   ON NOMATCH INCLUDE
* ------------------->    THIS INCLUDE OPERATES ON CHILD SEGMENT
*                        (SEE PAGE 4-57 AND 4-58 OF USERS MANUAL )
*  AFTER TUBE ANALYSIS IS ENTERED,  BRANCH TO CASE PTUBE, TO ENTER
*  REMAINING DATA ON ALL PRESSURE TUBES FOR THIS INGOT
*
   ON MATCH/NOMATCH GOTO PTUBE
ENDCASE
CASE PTUBE
*
* THIS CASE ENTERS REMAINING DATA ON EACH PRESSURE TUBE CORRESPONDING
* TO INGOT JUST ENTERED
*
 CRTFORM  LINE 1
   "  "
   "               ENTER REMAINING DATA ON EACH PRESSURE TUBE "
   "                                  ( PF7/PF8 TO MOVE UP/DOWN)"
   "  "
  "           TUBE NO. : <22 <TUBE_NO <40 REACTOR POSITION <60  <POSI>"
  "   TUBE COLD WORK % : <22 <TCW  <40 BILLET POSITION <60 <BILLET"
  "</3"
  "  FILL IN FIELDS AND PRESS ENTER TO CONTINUE "
  "  OR LEAVE BLANK AND PRESS ENTER TO EXIT UP TO NEXT INGOT"
*
* WHEN NO MORE TUBES ARE LEFT FOR THIS INGOT, A BLANK ENTERED WOULD
* CAUSE ROUTINE TO BRANCH TO THE TOP CASE, PROMPTING FOR NEXT INGOT
*
 IF TUBE_NO IS-NOT PRESENT THEN GOTO TOP;
 COMPUTE
   NGSCODE/A1= EDIT (POSITION, '9$$$$$');
*
* VALIDATING LEGITIMATE POSITION FIELD ( PREFIXED BY REACTOR LETTER )
*
  VALIDATE
    GOODLOC = IF NGSCODE IS 'B' OR
                 NGSCODE IS 'D' OR
                 NGSCODE IS 'S' OR
                 NGSCODE IS 'P' THEN 1
                                  ELSE 0;
  ON INVALID TYPE
     "REACTOR POSITION MUST BEGIN WITH VALID STATION IDENTIFIER"
     "I.E.  B____, OR P____, OR D____, OR S____.    ===> REENTER"
  ON INVALID GOTO PTUBE
*
* ON INVALID, BRANCH TO PTUBE TO REENTER POSITION
*
 MATCH TUBE_NO POSITION
   ON MATCH TYPE
     "  LOCATION <D.LOCATION OR TUBE NO <D.TUBE_NO MATCHES!!"
     "       ======>  RECORD REJECTED.     (SORRY!)"
   ON MATCH REJECT
   ON MATCH GOTO PTUBE
*
*  IF TUBE IS A DUPLICATE ONE, THEN 1) DISPLAY MESSAGE
*                                   2) REJECT THE DATA
*                                   3) RETRY ENTERING THE DATA
*  IF TUBE IS NOT A DUPLICATE, THEN PROMPT AND INCLUDE REMAINING DATA
*
   ON NOMATCH CRTFORM LINE 1
  "                TUBE TENSILES  (AT 3000 C  KPSI)"
  "      YIELD STRESS          U.T.S.              ELONGATION"
  "      ------------          ------              ----------"
  "         <YS              <UTS               <ELONG"
  "  "
  "  "
  "<10 CORROSION SAMPLE WT. GAIN (MG/DM**2) : <60 <CORROS"
  "  "
  "  "
  "              TUBE HARDNESS (B.H.N.) 3,000 KG"
  "    FRONT END : <TUBE_HARD_FR      BACK END : <TUBE_HARD_BA"
  "  "
  "  "
  "<40 TUBE_WT. (LBS) :<60 <TUBE_WT"
  "<40 STRAIGHTNESS   :<60 <STRAIGHTNESS"
  "  "
  "  "
  "               RESISTIVITY AFTER AUTOCLAVING  (MICRO-OHM.CM)"
  "     FRONT END : <RESIST_FR         BACK END : <RESIST_BA"
  "                                              PRESS PF8 FOR MORE  "
  "                   WALL THICKNESS (INS) "
  "     BODY OF TUBE         NO. END OF TUBE           PLAIN END  "
  "       MIN/MAX                MIN/MAX                MIN/MAX"
  "     ------------        ---------------           ---------  "
  " <BTMIN / <BTMAX <NTMIN / <NTMAX  <PTMIN / <PTMAX"
  "  "
  "  "
  "                      TUBE OVALITY "
  "             NO. END                    PLAIN END"
  "             MIN/MAX                     MIN/MAX "
  "             -------                    ---------"
  "      <NOMIN / <NOMAX  <POMIN / <POMAX"
  "  "
  "  "
  "                  AVERAGE TUBE OD  (INS)"
  "  NO. END : <TUBE_OD_NO      PLAIN END : <TUBE_OD_PL "
  "    "
  " CHANGE IN LENGTH : <CHANGE "
  " COMMENT : <COMMENTS"
  MATCH TUBE_NO POSITION
   ON NOMATCH INCLUDE
   GOTO PTUBE
ENDCASE
DATA VIA FIDEL
END
```

```
*********************************************************************
*                                                                   *
*                          PREMOVE.FEX                              *
*                                                                   *
*********************************************************************
* THIS ROUTINE REMOVES A PRESSURE TUBE FROM PTUBE DATABASE AND STORES
* IT ON THE DATABASE CALLED PMOVE
**
*                    WRITTEN BY FRED BUZHAKER, OCT, 1985.
**
-PROMPT &I.A8.ENTER INGOT NUMBER FOR THE TUBE TO BE REMOVED :.
-PROMPT &T.A8.ENTER TUBE NUMBER :.
-PROMPT &P.A6.ENTER POSITION :.
SET MSG=OFF
TABLE FILE PTUBE
   PRINT SEG.INGOT_NO SEG.TUBE_NB1 SEG.TUBE_NO
   IF INGOT_NO EQ &I
   IF TUBE_NO EQ &T
   IF POSITION EQ &P
   ON TABLE SAVE AS MOVER
END
SET MSG=ON
FILEDEF MOVER DISK C:MOVER.FTM
MODIFY FILE PMOVE
COMPUTE
   TEMP01/A8=;
   TEMP02/I4=;
   TEMP03/I4=;
   TEMP04/I4=;
   TEMP05/I4=;
   TEMP06/F5.3=;
   TEMP07/F5.3=;
   TEMP08/F5.3=;
   TEMP09/I5=;
   TEMP10/I5=;
   TEMP11/I5=;
   TEMP12/I3=;
   TEMP13/I3=;
   TEMP14/I3=;
   TEMP15/I3=;
   TEMP16/I3=;
   TEMP17/I3=;
   TEMP18/A13=;
   TEMP19/F4.2=;
   TEMP20/I5=;
   TEMP21/I3=;
   TEMP22/I3=;
   TEMP23/F4.2=;
   TEMP24/I5=;
   TEMP25/I3=;
   TEMP26/I3=;
   TEMP27/A8=;
   TEMP28/A6=;
   TEMP29/A4=;
```

```
    TEMP30/F5.2=;
    TEMP31/F5.2=;
    TEMP32/F5.2=;
    TEMP33/F5.2=;
    TEMP34/I3=;
    TEMP35/F5.2=;
    TEMP36/F5.2=;
    TEMP37/F7.3=;
    TEMP38/F6.4=;
    TEMP39/F5.2=;
    TEMP40/F5.2=;
    TEMP41/F7.5=;
    TEMP42/F7.5=;
    TEMP43/F7.5=;
    TEMP44/F7.5=;
    TEMP45/F7.5=;
    TEMP46/F7.5=;
    TEMP47/F7.5=;
    TEMP48/F7.5=;
    TEMP49/F7.5=;
    TEMP50/F7.5=;
    TEMP51/F7.5=;
    TEMP52/F7.5=;
    TEMP53/F8.6=;
    TEMP54/A41=;
FIXFORM ON MOVER TEMP01/8 TEMP02/4 TEMP03/4 TEMP04/4 TEMP05/4 TEMP06/5
FIXFORM TEMP07/5 TEMP08/5 TEMP09/5 TEMP10/5 TEMP11/5 TEMP12/3 TEMP13/3
FIXFORM TEMP14/3 TEMP15/3 TEMP16/3 TEMP17/3 TEMP18/13 TEMP19/4 TEMP20/5
FIXFORM TEMP21/3 TEMP22/3 TEMP23/4 TEMP24/5 TEMP25/3 TEMP26/3 TEMP27/8
FIXFORM TEMP28/6 TEMP29/4 TEMP30/5 TEMP31/5 TEMP32/5 TEMP33/5 TEMP34/3
FIXFORM TEMP35/5 TEMP36/5 TEMP37/7 TEMP38/6 TEMP39/5 TEMP40/5 TEMP41/7
FIXFORM TEMP42/7 TEMP43/7 TEMP44/7 TEMP45/7 TEMP46/7 TEMP47/7 TEMP48/7
FIXFORM TEMP49/7 TEMP50/7 TEMP51/7 TEMP52/7 TEMP53/8 TEMP54/41
COMPUTE
    INGOT_NO=TEMP01;
MATCH INGOT_NO
    ON NOMATCH COMPUTE
    HARD1=TEMP02;
    HARD2=TEMP03;
    HARD3=TEMP04;
    HARDA=TEMP05;
    TIN_NB=TEMP06;
    MIN_NB=TEMP07;
    BIN_NB=TEMP08;
    TIN_O=TEMP09;
    MIN_O=TEMP10;
    BIN_O=TEMP11;
    TIN_N=TEMP12;
    MIN_N=TEMP13;
    BIN_N=TEMP14;
    TIN_H=TEMP15;
    MIN_H=TEMP16;
    BIN_H=TEMP17;
    DATE=TEMP18;
```

```
   ON NOMATCH INCLUDE
   ON MATCH REJECT
   ON MATCH GOTO CASE1
   ON NOMATCH GOTO CASE2
CASE CASE1
   COMPUTE
   INGOT_NO=INGOT_NO;
MATCH INGOT_NO
   ON MATCH CONTINUE TO FIRST_TUBENB
   ON NOMATCH COMPUTE
   TUBE_NB1=TEMP19;
   TUBE_O1=TEMP20;
   TUBE_N1=TEMP21;
   TUBE_H1=TEMP22;
   TUBE_NB2=TEMP23;
   TUBE_O1=TEMP24;
   TUBE_N1=TEMP25;
   TUBE_H1=TEMP26;
   ON NOMATCH INCLUDE
   ON MATCH GOTO CASE2
ENDCASE
CASE CASE2
COMPUTE
   INGOT_NO=INGOT_NO;
   TUBE_NO=TEMP27;
   POSITION=TEMP28;
MATCH TUBE_NO POSITION
   ON MATCH TYPE "YOU HAVE REMOVED THIS RECORD ON <D.RDATE"
   ON MATCH REJECT
   ON MATCH GOTO EXIT
   ON NOMATCH COMPUTE
   BILLET_POS=TEMP29;
   TCW=TEMP30;
   YIELD_STRESS=TEMP31;
   UTS=TEMP32;
   ELONG=TEMP33;
   CORROS_SAMP=TEMP34;
   THFE=TEMP35;
   THBE=TEMP36;
   TUBE_WT=TEMP37;
   STRAIGHT=TEMP38;
   RFE=TEMP39;
   RBE=TEMP40;
   BTMAX=TEMP41;
   BTMIN=TEMP42;
   NTMAX=TEMP43;
   NTMIN=TEMP44;
   PTMAX=TEMP45;
   PTMIN=TEMP46;
   NOMIN=TEMP47;
   NOMAX=TEMP48;
   POMIN=TEMP49;
   POMAX=TEMP50;
   TOD1=TEMP51;
   TOD2=TEMP52;
   CHANGE=TEMP53;
   COMMENTS=TEMP54;
   RDATE/A8=;
   ON NOMATCH CRTFORM
   "  "
   "ENTER DATE OF REMOVAL YY/MM/DD : <RDATE"
   "  "
   "                        HIT RETURN TO PROCEED"
   ON NOMATCH INCLUDE
ENDCASE
DATA
END
MODIFY FILE PTUBE
MATCH INGOT_NO TUBE_NO POSITION
   ON MATCH DELETE
   ON NOMATCH TYPE
   "THIS TUBE IS NOT ON THE DATABASE.  CHECK YOUR INFORMATION"
   ON NOMATCH REJECT
DATA
INGOT_NO=&I, TUBE_NO=&T, POSITION=&P,  $
END
DOS ERASE MOVER.FTM
```

The following is the file structure of the data base called PMOVE. This data base is used when removing pressure tubes from the pressure tube data base as described in the preceeding program.

```
FILE PT, SUFFIX=FOC, $
 SEGNAME=INGOT, SEGTYPE=S1, $
  FIELD=INGOT_NO, I_NUM, A8, $
  FIELD=HARDNESS1, HARD1, I4,  $
  FIELD=HARDNESS2, HARD2, I4,  $
  FIELD=HARDNESS3, HARD3, I4,  $
  FIELD=AVE_HARDNESS, HARDA, I4,  $
  FIELD=TOP_INGOT_NB, TIN_NB, F5.3,  $
  FIELD=MID_INGOT_NB, MIN_NB, F5.3,  $
  FIELD=BOT_INGOT_NB, BIN_NB, F5.3,  $
  FIELD=TOP_INGOT_O, TIN_O, I5,  $
  FIELD=MID_INGOT_O, MIN_O, I5,  $
  FIELD=BOT_INGOT_O, BIN_O, I5,  $
  FIELD=TOP_INGOT_N, TIN_N, I3,  $
  FIELD=MID_INGOT_N, MIN_N, I3,  $
  FIELD=BOT_INGOT_N, BIN_N, I3,  $
  FIELD=TOP_INGOT_H, TIN_H, I3,  $
  FIELD=MID_INGOT_H, MIN_H, I3,  $
  FIELD=BOT_INGOT_H, BIN_H, I3,  $
  FIELD=DATE, BATCH_DATE, A13, $
 SEGNAME=ANALYSIS, SEGTYPE=U, PARENT=INGOT, $
  FIELD=FIRST_TUBENB, TUBE_NB1, F4.2,  $
  FIELD=FIRST_TUBEO, TUBE_O1, I5,  $
  FIELD=FIRST_TUBEN, TUBE_N1, I3,  $
  FIELD=FIRST_TUBEH, TUBE_H1, I3,  $
  FIELD=SECND_TUBENB, TUBE_NB2, F4.2,  $
  FIELD=SECND_TUBEO, TUBE_O2, I5,  $
  FIELD=SECND_TUBEN, TUBE_N2, I3,  $
  FIELD=SECND_TUBEH, TUBE_H2, I3,  $
 SEGMENT=TUBE, SEGTYPE=S2, PARENT=INGOT, $
  FIELD=TUBE_NO, NUMBER, A8,  $
  FIELD=POSITION, LOCATION, A6, $
  FIELD=BILLET_POS, , A4,  $
  FIELD=TUBECOLDWORK, TCW, F5.2,  $
  FIELD=YIELD_STRESS, YS, F5.2,  $
  FIELD=U.T.S., UTS, F5.2,  $
  FIELD=ELONG, , F5.2,  $
  FIELD=CS_WT_GAIN, CORROS_SAMP, I3,  $
  FIELD=TUBE_HARD_FR, THFE, F5.2,  $
  FIELD=TUBE_HARD_BA, THBE, F5.2,  $
  FIELD=TUBE_WEIGHT, TUBE_WT, F7.3,  $
  FIELD=STRAIGHTNESS,  , F6.4,  $
  FIELD=RESIST_FR, RFE, F5.2,  $
  FIELD=RESIST_BA, RBE, F5.2,  $
  FIELD=BODY_TH_MAX, BTMAX, F7.5,  $
  FIELD=BODY_TH_MIN, BTMIN, F7.5,  $
  FIELD=NEND_TH_MAX, NTMAX, F7.5,  $
```

```
FIELD=NEND_TH_MIN, NTMIN, F7.5,  $
FIELD=PEND_TH_MAX, PTMAX, F7.5,  $
FIELD=PEND_TH_MIN, PTMIN, F7.5,  $
FIELD=OVAL_NO_MIN, NOMIN, F7.5,  $
FIELD=OVAL_NO_MAX, NOMAX, F7.5,  $
FIELD=OVAL_PL_MIN, POMIN, F7.5,  $
FIELD=OVAL_PL_MAX, POMAX, F7.5,  $
FIELD=TUBE_OD_NO, TOD1, F7.5,  $
FIELD=TUBE_OD_PL, TOD2, F7.5,  $
FIELD=CHANGE, DELTA_L, F8.6,  $
FIELD=COMMENTS, REMARKS, A41, $
FIELD=RDATE, RDATE, A8, $
```

```
********************************************************************
*                                                                  *
*                        PTRANS.FEX                                *
*                                                                  *
********************************************************************
* THIS ROUTINE INPUTS DATA INTO THE PT DATABASE AND IS SIMILAR TO THE
* ROUTINE 'PTINPUT'.  THE DIFFERENCE BEING THAT PTINPUT USES CRTFORMS
* FOR ALL THE DATA ENTRY, WHILE THIS ROUTINE USES DATA FROM THE FILE
* DDNAME 'TUBEDATA'.  'TUBEDATA IS THE FILE TO WHICH DATA ENTRY CLERKS
* SEND DATA AND     IS A SIMPLE SEQUENTIAL LISTING OF THE FIELDS, SEP-
* ERATED BY NO BLANKS OR COMMAS.  THE DATA IS IN SETS OF INGOT NUMBER
* RELATED TUBES, WITH A TUBE NUMBER OF '****' SEPERATING EACH SET OF
* INGOT NUMBER TUBES.  THUS THE ROUTINE PROMPTS THE USER TO ENTER
* INGOT DATA WHENEVER A **** IS FOUND.
**
*                   WRITTEN BY ZINTIS PERKONS, AUG, 1985.
**
*  THE ROUTINE FIRST SETS UP TEMPORARY FIELDS IN WHICH TO READ THE
* TUBE DATA.  ONCE THIS IS DONE, THE PROGRAM TESTS THE FIRST FIELD FOR
* '***' AND IF FOUND BRANCHES TO CASE 'CINGOT' TO ENTER NEW INGOT
* DATA.  IF THE TUBE_NO IS VALID, THE PROGRAM INCLUDES THE CURRENT
* TRANSACTION BY ASSIGNING TO EACH PERMAMENT FIELD THE VALUE OF THE
* CORRESPONDING TEMPORARY FIELD.  (USING COMPUTE)
**
FILEDEF TUBEDATA DISK C:TUBEDATA.DAT
FILEDEF RONGDAT DISK C:RONGDAT.FTM
FILEDEF MATDAT DISK C:MATDAT.FTM
FILEDEF FORMDAT DISK C:FORMDAT.FTM
MODIFY FILE PTUBE
 COMPUTE
   TEMP01/A8=;
   TEMP02/A6=;
   TEMP03/A4=;
   TEMP04/F5.2=;
   TEMP05/F5.2=;
   TEMP06/F5.2=;
   TEMP07/F5.2=;
   TEMP08/I3=;
   TEMP09/F5.2=;
   TEMP10/F5.2=;
   TEMP11/F7.3=;
   TEMP12/F6.4=;
   TEMP13/F5.2=;
   TEMP14/F5.2=;
   TEMP15/F7.5=;
   TEMP16/F7.5=;
   TEMP17/F7.5=;
   TEMP18/F7.5=;
   TEMP19/F7.5=;
   TEMP20/F7.5=;
   TEMP21/F7.5=;
   TEMP22/F7.5=;
   TEMP23/F7.5=;
   TEMP24/F7.5=;
   TEMP25/F7.5=;
   TEMP26/F7.5=;
   TEMP27/F8.6=;
   TEMP28/A41=;
  FIXFORM ON TUBEDATA TEMP01/8 TEMP02/6 TEMP03/C4
  FIXFORM TEMP04/C5 TEMP05/C5 TEMP06/C5 TEMP07/C5
  FIXFORM TEMP08/C3 TEMP09/C5 TEMP10/C5
  FIXFORM TEMP11/C7 TEMP12/C6 TEMP13/C5 TEMP14/C5
  FIXFORM TEMP15/C7 TEMP16/C7 TEMP17/C7 TEMP18/C7
  FIXFORM TEMP19/C7 TEMP20/C7 TEMP21/C7 TEMP22/C7
  FIXFORM TEMP23/C7 TEMP24/C7 TEMP25/C7 TEMP26/C7
  FIXFORM TEMP27/C8 TEMP28/C20
 COMPUTE
   NGSCODE/A1     = EDIT (TEMP02, '9$$$$$');
   TUBECONTROL/A3 = EDIT (TEMP01, '999$$$$$');
 IF TUBECONTROL EQ '***' THEN GOTO C_INGOT
  ELSE GOTO TUBE1;
*
* SINCE THE FIRST FIELD (TUBE_NO) IS NOT ***, INCLUDE THE CURRENT
* TUBE DATA INTO THE DATABASE BY ACTIVATING THE FIELDS WITH COMPUTE
* AND INCLUDING THE DATA IF VALIDATIONS AND MATCHES ARE SATISFIED
*
CASE TUBE1
 IF INGOT_NO IS '          ' THEN GOTO TOP;
 COMPUTE
   TUBE_NO = TEMP01;
   POSITION = TEMP02;
   BILLET_POS = TEMP03;
   TCW = TEMP04;
   YIELD_STRESS = TEMP05;
   UTS = TEMP06;
   ELONG = TEMP07;
   CORROS_SAMP = TEMP08;
   THFE = TEMP09;
   THBE = TEMP10;
   TUBE_WT = TEMP11;
   STRAIGHT = TEMP12;
   RFE = TEMP13;
   RBE = TEMP14;
   BTMAX = TEMP15;
   BTMIN = TEMP16;
   NTMAX = TEMP17;
   NTMIN = TEMP18;
   PTMAX = TEMP19;
   PTMIN = TEMP20;
   NOMIN = TEMP21;
   NOMAX = TEMP22;
   POMIN = TEMP23;
   POMAX = TEMP24;
   TOD1 = TEMP25;
   TOD2 = TEMP26;
   CHANGE = TEMP27;
   COMMENTS = TEMP28;
 LOG FORMAT ON FORMDAT MSG OFF
```

```
* VALIDATE POSITION FIELD, (MUST BE PRECEEDED BY A 'B', 'D', 'P', OR 'S')
**
VALIDATE
    GOODLOC = IF NGSCODE IS 'B' OR
                 NGSCODE IS 'D' OR
                 NGSCODE IS 'P' OR
                 NGSCODE IS 'S' THEN 1
                                  ELSE 0;
**
* IF INVALID, THEN THE PROGRAM REJECTS THE TRANSACTION AND READS THE
* NEXT TUBE_NO ETC.
**
  LOG INVALID ON RONGDAT MSG OFF
  ON INVALID TYPE
     " REACTOR POSITION DOES NOT BEGIN WITH VALID STATION IDENTIFIER"
     " I.E.  B____, OR D____, P____, OR S_____. THEREFORE TRANSACTION REJECTEI
     " INGOT NO: <D.INGOT_NO TUBE_NO: <D.TUBE_NO  POSITION <D.POSITION"
  ON INVALID GOTO TOP
*
* ONCE THE TRANSACTION IS VAILDATED, MATCH KEY FIELDS TUBE_NO AND POSITION.
*
 MATCH TUBE_NO POSITION
   ON NOMATCH INCLUDE
   ON NOMATCH GOTO TOP
   ON MATCH TYPE
     "  LOCATION <D.LOCATION OR TUBE NO <D.TUBE_NO MATCHES!!"
     "      ======>  RECORD REJECTED.     "
   ON MATCH REJECT
   ON MATCH GOTO TOP
ENDCASE
CASE C_INGOT
**
* THIS CASE IS ENTERED WHENEVER A **** IS READ IN FROM THE DDNAME FILE
* SIGNALLING THAT  I) A SET OF TUBE DATA IS COMPLETE
*                 II) INGOT DATA IS NEEDED FOR THE NEXT SET
**
 CRTFORM  LINE 1
  "                 INPUTING PRESSURE TUBE DATA          (   PF8 FOR     ) "
  "         ENTER INGOT DATA FOR INGOT NO  <D.TEMP01>    ( INSTRUCTIONS ) "
  " "
  " INGOT NO. :  <INGOT_NO                               ( HIT RETURN TO ) "
  "                                                    ( SKIP TO NEXT INGOT )"
  "                       ONE   : <HARD1"
  " INGOT HARDNESS  ===>  TWO   : <HARD2                ( DON'T TOUCH F2 KEY!! )"
  "    (B.H.N.)           THREE : <HARD3                ========================"
  "    3,000 KG "
  "                       AVE   : <AVE  "
  "  "
  "                       INGOT ANALYSIS (PPM)              "
  "  "
  "            NB %         O           N           H     "
  "           ------       ------      ------      ------ "
  " TOP  :    <TIN_NB      <TIN_O      <TIN_N      <TIN_H "
  " MID  :    <MIN_NB      <MIN_O      <MIN_N      <MIN_H "
  " BOT  :    <BIN_NB      <BIN_O      <BIN_N      <BIN_H "
  "  "
  "           EXTRUSION DATE : <DATE"
  "                         INSTRUCTIONS"
  "                        --------------"
  "  "
  "              PF2  NEVER PRESS THIS KEY IN THIS PROCEDURE!!!!!!!!!!!!!!!!"
  "              PF3  KEY TO QUIT PROCEDURE COMPLETELY"
  "              PF7  KEY TO GO BACK TO DATA ENTERY SCREEN"
  "  "
  "       =====>  ENTER ALL AVAILABLE DATA WHERE PROMPTED "
  "             -  ENTER '.'  I.E. PERIOD,  WHEN DATA NOT AVAILABLE"
  "             -  WHEN COMPLETE, CHECK FOR ERRORS AND MAKE CORRECTIONS"
  "             -  THEN PRESS 'ENTER' TO ACCEPT DATA"
  "             -  TYPE 'END' IN TOP FIELD TO ACCEPT AND TERMINATE SESSION"
  "  "
  "  "
  "               (TAB)  KEY  ..... MOVES FORWARD AROUND SCREEN"
  "        (NUMBER PAD)  KEYS ..... MOVE FROM FIELD TO FIELD IN DESIRED"
  "                                 DIRECTION"
  " "
  "   IF YOU  ARE HAVING PROBLEMS WITH THIS SCREEN, CONSULT "
  "   FOCUS USERS MANUAL, CHAPTER 12; 'FIDEL'              "
**
* MATCH THE TOP FIELD, AND INCLUDE IF NO DUPLICATES ARE FOUND.
* THEN PROMPT FOR THE NEXT SEGMENT (WHICH IS UNIQUE - SEE PG. 4-57)
* ELSE IF FIELD MATCHES REJECT AND RETRY
**
 MATCH INGOT_NO
 LOG DUPL ON MATDAT MSG OFF
  ON MATCH TYPE
   "             INGOT NUMBER MATCHES ONE ALREADY IN DATABASE"
   "                 -CHECK AND REENTER"
  ON MATCH REJECT
  ON MATCH GOTO C_INGOT
  ON NOMATCH IF INGOT_NO IS-NOT PRESENT THEN GOTO TOP;
  ON NOMATCH INCLUDE
  ON NOMATCH GOTO COMPO
ENDCASE
CASE COMPO
 COMPUTE
   INGOT_NO=INGOT_NO;
 CRTFORM LINE 1
  " "
  "                          TUBE ANALYSIS  (PPM)      ( DON'T TOUCH F2 KEY!! )
  "                                                     =======================
  "                   NB %       O        N         H    "
  "                 ------     ------   ------    ------ "
  " FIRST TUBE :  <TUBE_NB1      <TUBE_O1      <TUBE_N1      <TUBE_H1"
  " "
  "  LAST TUBE :  <TUBE_NB2      <TUBE_O2      <TUBE_N2      <TUBE_H2"
  "</3"
  " <35 PRESS ENTER TO CONTINUE"
 MATCH INGOT_NO
```

```
    ON MATCH CONTINUE TO FIRST_TUBENB
    ON NOMATCH INCLUDE
*  ----------------->     THIS INCLUDE OPERATES ON CHILD SEGMENT
*                        (SEE PAGE 4-57 AND 4-58 OF USERS MANUAL )
ON MATCH/NOMATCH GOTO TOP
ENDCASE
DATA VIA FIDEL
END
```

```
****************************************************************************
*                                                                          *
*                              PBROWSE.FEX                                 *
*                                                                          *
****************************************************************************
* THIS ROUTINE ALLOWS THE USER TO VIEW THE DATABASE ONE SEQUENTIALLY, ONE  *
*   SEGMENT AT A TIME,UNTIL ALL THE RECORDS HAVE BEEN EXHAUSTED.           *
****************************************************************************
*                                                                          *
*                    PROGRAM WRITTEN BY JAMES LIZOTTE                      *
*                               JUNE 1986                                  *
*                                                                          *
****************************************************************************
MODIFY FILE PTUBE
 COMPUTE
  ACTION/A1=' ';
  NEXT INGOT_NO
    ON NONEXT GOTO EXIT
    ON NEXT CRTFORM LINE 1
  " IMMMMMMMMMMMMMMMMMMMMMMMMMMM INGOT SEGMENT MMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
  " :  INGOT NUMBER: <D.I_NUM                                          :"
  " :  HARDNESS 1:   <D.HARD1                                                :
  " :  HARDNESS 2:   <D.HARD2                                                :
  " :  HARDNESS 3:   <D.HARD3                                                :
  " :  AVG HARDNESS: <D.HARDA                                                :
  " :  BATCH DATE:   <D.DATE                                      :"
  " LMMMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMMMMMMM9"
  " :  INGOT (PPM)   :      TOP      :      MIDDLE   :      BOTTOM         :"
  " LMMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMMMMMMM9"
  " :        NB%     <20   <D.TIN_NB   <39  <D.MIN_NB   <56  <D.BIN_NB  <73 :"
  " :        O       <20   <D.TIN_O    <39  <D.MIN_O    <56  <D.BIN_O   <73 :"
  " :        N       <20   <D.TIN_N    <39  <D.MIN_N    <56  <D.BIN_N   <73 :"
  " :        H       <20   <D.TIN_H    <39  <D.MIN_H    <56  <D.BIN_H   <73 :"
  " LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
  " :                                                                      :"
  " :          ENTER - T - TO VIEW TUBE SEGMENT                            :"
  " :          ENTER - X - TO EXIT ROUTINE                                 :"
  " :          ENTER - A - TO VIEW ANALYSIS SEGMENT <ACTION          <73 :"
  " HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  ON NEXT IF ACTION EQ 'T' THEN GOTO TUBE1
      ELSE IF ACTION EQ 'X' THEN GOTO EXIT
      ELSE IF ACTION NE 'A' THEN GOTO TOP;
  ON NEXT CONTINUE TO TUBE_NB1
  ON NONEXT GOTO TOP
ON NEXT CRTFORM LINE 1
 "IMMMMMMMMMMMMMMMKMMMMMMM ANALYSIS SEGMENT MMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
 ":                :                                                       :"
 ":    NB (%)      :               O             N              H          :"
 "LMMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
 ":                                                                        :"
 ":    <D.TUBE_NB1       <27 <D.TUBE_O1  <44 <D.TUBE_N1 <60 <D.TUBE_H1 < 73 :"
 ":                                                                        :"
 ":    <D.TUBE_NB2   <27 <D.TUBE_O2   <44 <D.TUBE_N2  <60 <D.TUBE_H2 <73 :"
 ":                                                                        :"
```

```
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
":                                                                            :"
":                    ENTER - T - TO VIEW TUBE SEGMENT                        :"
":                    ENTER - X - TO EXIT                                     :"
":                    ENTER - I - TO VIEW NEXT INGOT <ACTION       <73 :"
"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
  IF ACTION EQ 'X' THEN GOTO EXIT;
   IF ACTION EQ 'T' THEN GOTO TUBE1;
GOTO TOP
 ****************************************************************************
 *  THIS CASE ALLOWS THE USER TO VIEW THE TUBE SEGMENTS OF THE PRESSURE     *
 *   TUBE DATABASE.                                                         *
 ****************************************************************************
 CASE TUBE1
    NEXT TUBE_NO
     ON NONEXT GOTO TOP
     ON NEXT CRTFORM LINE 1
":  TUBE NUMBER:  <25 <D.NUMBER <40 POSITION <60  <D.LOCATION <75 :"
":  BILLET POSITION: <25 <D.BILLET_POS <40 TUBE COLD WORK: <60 <D.TCW <75 :"
":  YIELD STRESS:   <25 <D.YS <40 U.T.S <60 <D.UTS <75 :"
":  ELONGATION:   <25 <D.ELONG <40 CS WEIGHT GAIN: <60 <D.CORROS_SAMP <75 :"
":  TUBE HARDNESS FRONT: <25 <D.THFE <40 TUBE HARDNESS BACK:<60 <D.THBE <75 :"
":  TUBE WEIGHT: <25 <D.TUBE_WT <40 STRAIGHTNESS: <60 <D.STRAIGHT <75 :"
":  RESISTIVITY FRONT: <25 <D.RFE <40 RESISTIVITY BACK: <60 <D.RBE <75 :"
":                                                                          :"
":    CHARACTERISTIC                                MIN            MAX      :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
": WALL THICKNESS   BODY:                       <D.BTMIN        <D.BTMAX <75 :"
":                  NO.END:                     <D.NTMIN        <D.NTMAX <75 :"
":                  PLAIN END:                  <D.PTMIN        <D.PTMAX <75 :"
": TUBE OVALITY ID  NO.END:                     <D.NOMIN        <D.NOMAX <75 :"
":                  PLAIN END:                  <D.POMIN        <D.POMAX <75 :"
"LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
": AVERAGE TUBE OD: PLAIN END <D.TOD2  <75 :"
":                  NO.END    <D.TOD1  <75 :"
": COMMENTS: <D.REMARKS <75 :"
":    ENTER - I - FOR NEXT INGOT , - T - FOR NEXT TUBE SEGMENT. <ACTION  <75 :"
IF ACTION EQ 'T' GOTO TUBE1;
 IF ACTION EQ 'X' THEN GOTO EXIT
              ELSE GOTO TOP;
 ENDCASE
 DATA VIA FIDEL
 END
```

```
*****************************************************************************
*
*                                PTREC.FEX
*
*****************************************************************************
* THIS PROGRAM LOADS THE DATABASE INTO THE PC FROM A BACKUP DISKETTE. THIS
*  ROUTINE IS PROVIDED AS A PRECAUTION IN CASE OF ACCIDENTAL LOSS OF THE
*  PRESSURE TUBE DATA BASE.
*****************************************************************************
*
*                       PROGRAM WRITTEN BY JAMES LIZOTTE
*                                  JULY 1986
*
*****************************************************************************
-RECOVER
-SET &ACTION=' ';
-CRTFORM LINE 1
-"    IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-"    :                                                                   : "
-"    :                  WELCOME TO THE RECOVERY PROCEDURE                :"
-"    :                  FOR THE PRESSURE TUBE DATA BASE.                 :"
-"    :                                                                   :"
-"    :        THIS ROUTINE ENABLES THE RECOVERY OF THE LATEST BACKUP     :"
-"    :          COPY OF THE PRESSURE TUBE DATA BASE STORED ON A DISKETTE. :"
-"    :                                                                   : "
-"    :               PLEASE INSERT BACKUP DISK INTO DRIVE A:             :"
-"    :                                                                   : "
-"    :                 ENTER -R- TO CONTINUE RECOVERY PROCEDURE          :"
-"    :                 ENTER -X- TO EXIT TO MAINMENU                     :"
-"    :                                                                   :"
-"    :                     ENTER CHOICE<&ACTION  <73 :"
-"    :                                                                   :"
-"    HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-IF &ACTION EQ 'X' THEN GOTO EXIT;
-IF &ACTION NE 'R' THEN GOTO RECOVER;
DOS COPY A:PTUBE.MAS  C:\
DOS COPY A:PTUBE.FOC  C:\
-EXIT
END
```

```
************************************************************
*                                                          *
*                    PTADDSEG.FEX                          *
*                                                          *
************************************************************
* THIS ROUTINE INPUTS DATA INTO THE PRESSURE TUBE DATA BASE *
* THE ROUTINE CHECKS FOR ERRORS IN THE POSITION FIELD, AND BY DEFAULT
* CHECKS ALL FIELDS FOR APPROPRIATE ALPHANUMERIC OR NUMERIC INPUT.  ON
* FINDING AN ERROR, THE CURRENT SCREEN IS REJECTED, AND THE OPERATOR HAS
* A CHANCE TO REENTER THE FIELDS.
*
*                 WRITTEN BY FRED BUZHAKER, SEPT.-OCT., 1985
MODIFY FILE PTUBE
 CRTFORM  LINE 1
  "               INPUTING PRESSURE TUBE DATA    ( PF8 FOR )       "
  "                                             ( INSTRUCTIONS )   "
  "                                                                "
  " INGOT NO. :  <INGOT_NO                                       "
  " "
  " PRESS RETURN AFTER ENTERING"
  "</14"
  "                      INSTRUCTIONS"
  "                     --------------"
  "  "
  "            PF2  KEY TO CANCEL ENTRY"
  "            PF3  KEY TO QUIT PROCEDURE COMPLETELY"
  "            PF7  KEY TO GO BACK TO DATA ENTERY SCREEN"
  "  "
  "      =====>  ENTER ALL AVAILABLE DATA WHERE PROMPTED "
  "           -  ENTER '.'  I.E. PERIOD,  WHEN DATA NOT AVAILABLE"
  "           -  WHEN COMPLETE, CHECK FOR ERRORS AND MAKE CORRECTIONS"
  "           -  THEN PRESS 'ENTER' TO ACCEPT DATA"
  "           -  TYPE 'END' IN TOP FIELD TO ACCEPT AND TERMINATE SESSION"
  "  "
  "  "
  "            (TAB)  KEY  ..... MOVES FORWARD AROUND SCREEN"
  "       (NUMBER PAD)  KEYS ..... MOVE FROM FIELD TO FIELD IN DESIRED"
  "                              DIRECTION"
  " "
  "   IF YOU  ARE HAVING PROBLEMS WITH THIS SCREEN, CONSULT "
  "   FOCUS USERS MANUAL, CHAPTER 12; 'FIDEL'             "
 MATCH INGOT_NO
*
* CHECK IF THIS INGOT EXISTS
* AND PROMPT FOR MORE INFORMATION
*
  ON NOMATCH TYPE
   "          THIS INGOT IS NOT IN THE DATABASE"
   "              -CHECK AND REENTER"
  ON NOMATCH REJECT
  ON MATCH GOTO PTUBE
CASE PTUBE
*
* THIS CASE ENTERS REMAINING DATA ON EACH PRESSURE TUBE CORRESPONDING
* TO THE INGOT NUMBER JUST ENTERED
*
  CRTFORM LINE 1
  "                ENTER DATA ON EACH PRESSURE TUBE "
  "                                                      "
  "  "
  "           TUBE NO. : <22 <TUBE_NO <40 REACTOR POSITION <60  <POSI>"
  "   TUBE COLD WORK % : <22 <TCW  <40 BILLET POSITION <60 <BILLET"
  "</3"
  "  FILL IN FIELDS AND PRESS ENTER TO CONTINUE "
  "  OR LEAVE BLANK AND PRESS ENTER TO EXIT UP TO NEXT INGOT"
  "</8"
*
* WHEN NO MORE TUBES ARE LEFT FOR THIS INGOT, A BLANK ENTERED WOULD
* CAUSE ROUTINE TO BRANCH TO THE TOP CASE, PROMPTING FOR NEXT INGOT
*
 IF TUBE_NO IS-NOT PRESENT THEN GOTO TOP;
 COMPUTE
   NGSCODE/A1= EDIT (POSITION, '9$$$$$');
*
* VALIDATING LEGITIMATE POSITION FIELD ( PREFIXED BY REACTOR LETTER )
*
  VALIDATE
    GOODLOC = IF NGSCODE IS 'B' OR
                 NGSCODE IS 'D' OR
                 NGSCODE IS 'S' OR
                 NGSCODE IS 'P' THEN 1
                                  ELSE 0;
  ON INVALID TYPE
     "REACTOR POSITION MUST BEGIN WITH VALID STATION IDENTIFIER"
     "I.E.  B____, OR P____, OR D____, OR S____.   ===> REENTER"
  ON INVALID GOTO PTUBE
*
* ON INVALID, BRANCH TO PTUBE TO REENTER POSITION
*
 MATCH TUBE_NO POSITION
   ON MATCH TYPE
      "  LOCATION <D.LOCATION OR TUBE NO <D.TUBE_NO MATCHES!!"
      "      ======}  RECORD REJECTED.    (SORRY!)"
   ON MATCH REJECT
   ON MATCH GOTO PTUBE
*
*  IF TUBE IS A DUPLICATE ONE, THEN 1) DISPLAY MESSAGE
*                                   2) REJECT THE DATA
*                                   3) RETRY ENTERING THE DATA
*  IF TUBE IS NOT A DUPLICATE, THEN PROMPT AND INCLUDE REMAINING DATA
*
   ON NOMATCH CRTFORM LINE 1
  "               TUBE TENSILES  (AT 3000 C  KPSI)"
  "      YIELD STRESS          U.T.S.             ELONGATION"
  "      ------------          ------             ----------"
  "         <YS              <UTS             <ELONG"
  "  "
  "  "
  "<10 CORROSION SAMPLE WT. GAIN (MG/DM**2) : <60 <CORROS"
  "  "
  "  "
  "             TUBE HARDNESS (B.H.N.) 3,000 KG"
  "    FRONT END : <TUBE_HARD_FR      BACK END : <TUBE_HARD_BA"
  "  "
  "  "
  "<40 TUBE_WT. (LBS)  :<60 <TUBE_WT"
  "<40 STRAIGHTNESS    :<60 <STRAIGHTNESS"
  "  "
  "  "
  "               RESISTIVITY AFTER AUTOCLAVING  (MICRO-OHM.CM)"
  "     FRONT END : <RESIST_FR          BACK END : <RESIST_BA"
  "                                              PRESS PF8 FOR MORE   "
  "                   WALL THICKNESS (INS) "
  "     BODY OF TUBE         NO. END OF TUBE           PLAIN END   "
  "       MIN/MAX               MIN/MAX                 MIN/MAX"
  "     ------------         ---------------           ---------   "
  " <BTMIN / <BTMAX <NTMIN / <NTMAX  <PTMIN / <PTMAX"
  "  "
  "  "
  "                      TUBE OVALITY "
  "             NO. END               PLAIN END"
  "             MIN/MAX                MIN/MAX "
  "             -------               ---------"
  "      <NOMIN / <NOMAX  <POMIN / <POMAX"
  "  "
  "  "
  "                  AVERAGE TUBE OD  (INS)"
  "  NO. END : <TUBE_OD_NO      PLAIN END : <TUBE_OD_PL "
  "    "
  " CHANGE IN LENGTH : <CHANGE "
  " COMMENT : <COMMENTS"
  MATCH TUBE_NO POSITION
   ON NOMATCH INCLUDE
   GOTO PTUBE
ENDCASE
DATA
END
```

```
*****************************************************************
*                                                               *
*                         PTDELSEG.FEX                          *
*                                                               *
*****************************************************************
* PROCEDURE TO DELETE PRESSURE TUBE DATA (SEGMENT) FROM AN INGOT
*
*                 WRITTEN BY FRED BUZHAKER SEPT.-OCT, 1985
*
MODIFY FILE PTUBE
   MATCH INGOT_NO TUBE_NO POSITION
   ON MATCH DELETE TUBE_NO
   ON NOMATCH TYPE "THIS TUBE DOESN'T EXIST OR HAS BEEN DELETED BEFORE"
   ON NOMATCH REJECT
DATA
INGOT_NO='&ING.A8.ENTER INGOT NUMBER TO START DELETE PROCEDURE.',
TUBE_NO='&TUB.A8.ENTER TUBE NUMBER FOR THE TUBE YOU WISH TO DELETE.',
POSITION='&POS.A6.ENTER POSITION.', $
END
```

```
*****************************************************************
*                                                               *
*                          PTUPDAT.FEX                          *
*                                                               *
*****************************************************************
* THIS ROUTINE UPDATES DATA IN THE PRESSURE TUBE DATA BASE *
* THE ROUTINE CHECKS FOR ERRORS IN THE POSITION FIELD, AND BY DEFAULT
* CHECKS ALL FIELDS FOR APPROPRIATE ALPHANUMERIC OR NUMERIC INPUT.  ON
* FINDING AN ERROR, THE CURRENT SCREEN IS REJECTED, AND THE OPERATOR HAS
* A CHANCE TO REENTER THE FIELDS.
*
*                    WRITTEN BY FRED BUZHAKER, SEPT-OCT, 1985.*
MODIFY FILE PTUBE
  CRTFORM LINE 1
  "              PROCEDURE TO UPDATE PRESSURE TUBE INFORMATION"
  "                                         ( F3 TO QUIT UPDATE )"
  " INGOT NO. :  <INGOT_NO "
  "  "
  MATCH INGOT_NO
  ON NOMATCH TYPE "RE-ENTER PLEASE, YOU MISTYPED INGOT_NO"
  ON NOMATCH REJECT
  ON NOMATCH GOTO TOP
  ON MATCH CRTFORM LINE 4
  "  "
  "              UPDATE REQUIRED DATA ON REQUESTED PRESSURE TUBE "
  "  "
  "  "
  "            TUBE NO. : <22 <TUBE_NO <40 REACTOR POSITION <57  <POSI>"
  "  "
  "  "
  "  "
  "  "
  "  "
  "  "
  "  "
  "  "
  "  "
 MATCH TUBE_NO POSITION
 ON NOMATCH TYPE "THIS TUBE DOESN'T EXIST"
 ON NOMATCH REJECT
 ON NOMATCH GOTO TOP
 ON MATCH CRTFORM LINE 9
  "   "
  "   TUBE COLD WORK % : <22 <T.TCW  <40 BILLET POSITION <60 <T.BILLET"
  "</3"
  "  UPDATE  FIELDS AND PRESS ENTER TO CONTINUE "
  "  OR LEAVE        AND PRESS ENTER TO EXIT UP TO NEXT SCREEN"
  "  "
  "  "
  "  "
  "  "
 ON MATCH GOTO SCREEN2
 CASE SCREEN2
 MATCH TUBE_NO POSITION
```

```
  ON NOMATCH REJECT
  ON NOMATCH GOTO TOP
  ON MATCH CRTFORM LINE 1
   "                TUBE TENSILES  (AT 3000 C  KPSI)"
   "      YIELD STRESS          U.T.S.            ELONGATION"
   "      ------------          ------            ----------"
   "         <T.YS             <T.UTS            <T.ELONG"
   "  "
   "  "
   "<10 CORROSION SAMPLE WT. GAIN (MG/DM**2) : <60 <T.CORROS"
   "  "
   "             TUBE HARDNESS (B.H.N.) 3,000 KG"
   "    FRONT END : <T.TUBE_HARD_FR      BACK END : <T.TUBE_HARD_BA"
   "  "
   "  "
   "<40 TUBE_WT. (LBS) :<60 <T.TUBE_WT"
   "<40 STRAIGHTNESS   :<60 <T.STRAIGHTNESS"
   "  "
   "  "
   "               RESISTIVITY AFTER AUTOCLAVING  (MICRO-OHM.CM)"
   "     FRONT END : <T.RESIST_FR         BACK END : <T.RESIST_BA"
   "  "
   "                                                 PRESS RETURN FOR MORE"
  ON MATCH GOTO SCREEN3
  ENDCASE
  CASE SCREEN3
  MATCH TUBE_NO POSITION
  ON NOMATCH REJECT
  ON NOMATCH GOTO TOP
  ON MATCH CRTFORM LINE 1
   "                  WALL THICKNESS (INS) "
   "     BODY OF TUBE         NO. END OF TUBE          PLAIN END  "
   "       MIN/MAX                MIN/MAX                MIN/MAX"
   "     ------------         ---------------          ---------  "
   " <T.BTMIN / <T.BTMAX <T.NTMIN / <T.NTMAX  <T.PTMIN / <T.PTMAX"
   "  "
   "  "
   "                     TUBE OVALITY "
   "            NO. END                PLAIN END"
   "            MIN/MAX                 MIN/MAX "
   "            -------                ---------"
   "      <T.NOMIN / <T.NOMAX  <T.POMIN / <T.POMAX"
   "  "
   "  "
   "                  AVERAGE TUBE OD  (INS)"
   "  NO. END : <T.TUBE_OD_NO      PLAIN END : <T.TUBE_OD_PL "
   "    "
   " CHANGE IN LENGTH : <T.CHANGE "
   " COMMENT : <T.COMMENTS"
   "                                 PRESS RETURN TO UPDATE ANOTHER TUBE"
ON MATCH UPDATE *
ENDCASE
DATA
END
```

```
********************************************************************
*                                                                  *
*                          PINGUP.FEX                              *
*                                                                  *
********************************************************************
* THIS ROUTINE UPDATES INGOT INFORMATION IN THE PRESSURE TUBE DATA BASE
* THE ROUTINE CHECKS BY DEFAULT ALL FIELDS FOR APPROPRIATE ALPHANUMERIC
* OR NUMERIC INPUT.  ON FINDING AN ERROR, THE CURRENT SCREEN IS REJECTED,
* AND THE OPERATOR HAS A CHANCE TO REENTER THE FIELDS.
*
*                  WRITTEN BY FRED BUZHAKER, NOV.,1985.*
MODIFY FILE PTUBE
 CRTFORM  LINE 1
  "                   UPDATE INGOT INFORMATION      (   PF8 FOR    ) "
  "                                                 ( INSTRUCTIONS ) "
  " "
  " INGOT NO. :  <INGOT_NO "
  MATCH INGOT_NO
  ON NOMATCH TYPE "THIS INGOT IS NOT IN THE DATABASE"
  ON NOMATCH REJECT
  ON MATCH CRTFORM LINE 1
  "                   UPDATE INGOT INFORMATION      (   PF8 FOR    ) "
  "                                                 ( INSTRUCTIONS ) "
  " "
  " INGOT NO. :  <T.INGOT_NO "
  " "
  "                         ONE   : <T.HARD1"
  " INGOT HARDNESS  ===>  TWO   : <T.HARD2"
  "    (B.H.N.)             THREE : <T.HARD3"
  "    3,000 KG "
  "                         AVE   : <T.AVE  "
  "  "
  "  "
  "                         INGOT ANALYSIS                  "
  "           NB %           O            N           H    "
  "           ------       ------       ------      ------ "
  "TOP  :     <T.TIN_NB      <T.TIN_O      <T.TIN_N      <T.TIN_H"
  "MID  :     <T.MIN_NB      <T.MIN_O      <T.MIN_N      <T.MIN_H"
  "BOT  :     <T.BIN_NB      <T.BIN_O      <T.BIN_N      <T.BIN_H"
  "  "
  "           EXTRUSION DATE : <T.DATE        PRESS ENTER FOR MORE"
  "                            INSTRUCTIONS"
  "                            -------------"
  "  "
  "              PF2  KEY TO CANCEL SCREEN ENTRY"
  "              PF3  KEY TO QUIT PROCEDURE COMPLETELY"
  "              PF7  KEY TO GO BACK TO DATA ENTERY SCREEN"
  "  "
  "       =====>  ENTER ALL AVAILABLE DATA WHERE PROMPTED "
  "            -  ENTER '.'  I.E. PERIOD,  WHEN DATA NOT AVAILABLE"
  "            -  WHEN COMPLETE, CHECK FOR ERRORS AND MAKE CORRECTIONS"
  "            -  THEN PRESS 'ENTER' TO ACCEPT DATA"
  "            -  TYPE 'END' IN TOP FIELD TO ACCEPT AND TERMINATE SESSION"
  "  "
  "  "
  "               (TAB)  KEY  ..... MOVES FORWARD AROUND SCREEN"
  "        (NUMBER PAD)  KEYS ..... MOVE FROM FIELD TO FIELD IN DESIRED"
  "                                 DIRECTION"
  " "
  "   IF YOU  ARE HAVING PROBLEMS WITH THIS SCREEN, CONSULT "
  "   FOCUS USERS MANUAL, CHAPTER 12; 'FIDEL'              "
*
* AFTER ENTERING FIRST SET OF DATA, CHECK FOR SPECIFIED INGOT NUMBER AND,
* REJECT AND RETRY IF INGOT IS NOT FOUND, OTHERWISE UPDATE THIS DATA
* AND PROMPT FOR MORE INFORMATION
*
  ON MATCH UPDATE *
  ON MATCH GOTO COMPO
CASE COMPO
*
* THIS CASE PROMPTS FOR THE TUBE ANALYSIS DONE ON THE FIRST AND LAST
* TUBES FOR EACH INGOT.
*
 COMPUTE
   INGOT_NO=INGOT_NO;
 MATCH INGOT_NO
   ON MATCH CONTINUE TO FIRST_TUBENB
   ON MATCH CRTFORM LINE 1
  " "
  "                          TUBE ANALYSIS  (PPM)"
  " "
  "               NB %        O         N         H    "
  "               ------    ------    ------    ------ "
  " FIRST TUBE :  <T.TUBE_NB1     <T.TUBE_O1      <T.TUBE_N1      <T.TUBE_H1'
  " "
  "  LAST TUBE :  <T.TUBE_NB2     <T.TUBE_O2      <T.TUBE_N2      <T.TUBE_H2'
  "</3"
  " <35 PRESS ENTER TO CONTINUE"
* ------------------>    THIS UPDATE OPERATES ON CHILD SEGMENT
*                       (SEE PAGE 4-57 AND 4-58 OF USERS MANUAL )
*
   ON MATCH UPDATE TUBE_NB1 TUBE_O1 TUBE_N1 TUBE_H1 TUBE_NB1 TUBE_O2
   ON MATCH UPDATE TUBE_N2 TUBE_H2
   ON NOMATCH REJECT
MATCH TUBE_NO POSITION
   ON MATCH/NOMATCH GOTO TOP
ENDCASE
DATA VIA FIDEL
END
```

```
**********************************************************************
*                                                                    *
*                        PSHOW.FEX                                   *
*                                                                    *
**********************************************************************
-SET &LINE1 = 'TABLE FILE PTUBE.TUBE_NO                               ';
-SET &LINE2 = '    HEADING CENTER                                     ';
-SET &LINE3 = '    " PRESSURE TUBE DATABASE"                          ';
-SET &LINE4 = '  "PRESSURE TUBES IN GROUPS OF INCREASING YIELD STRESS"';
-SET &LINE5 = '    " "                                                ';
-SET &LINE6 = '    PRINT TUBE_NO                                      ';
-SET &LINE7 = '          LOC_POSITION YS_MPA                          ';
-SET &LINE8 = '    BY NGSNAME  BY REACTOR                             ';
-SET &LINE9 = '    BY YS_MPA IN-GROUPS-OF 5.0 TOP 380.0               ';
-SET &LINE10= '    ON YS_MPA SKIP-LINE ON REACTOR UNDER-LINE          ';
-SET &LINE11= '    END                                                ';
-BEGINNING
-SET &YN = ' ';
-SET &HARD = ' ';
-CRTFORM
-"        FOCUS RETRIEVAL MODIFY SCREEN  - PUT X HERE TO EXIT :<&YN"
-"  "
-"******************************************************************"
-"* <T.&LINE1  <70 *"
-"* <T.&LINE2  <70 *"
-"* <T.&LINE3  <70 *"
-"* <T.&LINE4  <70 *"
-"* <T.&LINE5  <70 *"
-"* <T.&LINE6  <70 *"
-"* <T.&LINE7  <70 *"
-"* <T.&LINE8  <70 *"
-"* <T.&LINE9  <70 *"
-"* <T.&LINE10 <70 *"
-"* <T.&LINE11 <70 *"
-"******************************************************************"
-"                 INSTRUCTIONS:                                    "
-"   MAKE ALL THE REQUIRED CHANGES TO THE SCREEN ABOVE, AND         "
-"   WHEN READY, PRESS ENTER TO EXECUTE THE RETRIEVAL.              "
-"               TO EXIT, TYPE AN X IN PROPER SPOT.                 "
-IF &YN IS 'X' THEN GOTO EXIT;
SET PANEL=80, WIDTH=80
&LINE1
&LINE2
&LINE3
&LINE4
&LINE5
&LINE6
&LINE7
&LINE8
&LINE9
&LINE10
&LINE11
-RUN
-CRTFORM
```

```
-"  DO YOU WANT A HARD COPY?  Y/N ====><&YN"
-IF &YN IS-NOT 'Y' THEN GOTO BEGINNING;
DOS \DOS\LPT1:132
OFFLINE
SET WIDTH=130, PANEL=160, COLOR=OFF
&LINE1
&LINE2
&LINE3
&LINE4
&LINE5
&LINE6
&LINE7
&LINE8
&LINE9
&LINE10
&LINE11
OFFLINE CLOSE
ONLINE
SET PANEL=80, COLOR=ON
-RUN
-GOTO BEGINNING
-EXIT
```

```
************************************************
*                                              *
*                  PGRAPH.FEX                  *
*                                              *
************************************************
-* THIS ROUTINE DRIVES FOUR GRAPH ROUTINES FOR BOTH DATABASES
-*
-SET &MSG = '                                   ';
-GRPHMENU
-SET &OPT = ' ';
-CRTFORM
-"         GRAPHING/PLOTTING ROUTINE"
-"   DATE: <D.&DATE             TIME : <D.&TOD"
-" "
-" "
-"      OPTION              TYPE OF GRAPH"
-"      ------              -------------"
-"        1               CONNECTED POINT"
-"        2                  PIE CHART"
-"        3                  BAR GRAPH"
-"        4                   SAMPLE"
-"        X                    EXIT"
-" "
-"    ENTER OPTION ====><&OPT    THEN PRESS ENTER"
-"</2"
-"         <D.&MSG"
-SET &FUNC = DECODE &OPT ( 1 'EX PGRAPH1'
-                          2 'EX PGRAPH2'
-                          3 'EX PGRAPH3'
-                          4 'EX PGRAPH4'
-                          X 'EXIT'
-                          ELSE 'GRPHMENU');
-SET &MSG = IF &FUNC EQ 'GRPHMENU' THEN '** INVALID ENTRY -REENTER**'
-                                 ELSE &FUNC;
-IF &FUNC EQ 'EXIT' OR 'MAINMENU' THEN GOTO &FUNC;
&FUNC
-RUN
-GOTO GRPHMENU
-EXIT
```

```
*****************************************************************
*                                                               *
*                          PGRAPH1.FEX                          *
*                                                               *
*****************************************************************
* THIS ROUTINE GRAPHS TWO COMPUTABLE FIELDS ON VERTICAL AND
* HORIZONTAL AXES.
SET PIE = OFF
SET GRID = ON
SET HAXIS = 75, VAXIS = 60
GRAPH FILE PTUBE
HEADING CENTER
"&TITLE1.A30.ENTER TITLE."
"&TITLE2.A30.MORE."
SUM &FIELD1.A12.ENTER FIELD ON VERTICAL AXIS.
ACROSS &FIELD2.A12.AND    FIELD ON HORIZONTAL AXIS.
IF INGOT_NO IS &VALUE3.A8.FINALLY ENTER INGOT NUMBER.
END
```

```
***********************************************************
*                                                         *
*                    PGRAPH2.FEX                          *
*                                                         *
***********************************************************
* THIS ROUTINE GRAPHS ONE COMPUTABLE FIELD  ON A PIE GRAPH
SET PIE = ON, BARNUM = ON
SET FORE=ICYAN
SET HAXIS=80, VAXIS=20, GRID=ON, VGRID=ON
SET BARWIDTH=1, BARSPACE=1
GRAPH FILE PTUBE
HEADING CENTER
"&TITLE1.A30.ENTER TITLE."
"&TITLE2.A30.MORE."
WRITE &FIELD1.A12.ENTER FIELD FOR PIE GRAPH.
ACROSS &FIELD2.A12.DISPLAYED BY WHAT FIELD?.
IF INGOT_NO IS &VALUE3.A8.FINALLY ENTER INGOT NUMBER.
END
```

```
***************************************************************
*                                                             *
*                        PGRAPH3.FEX                          *
*                                                             *
***************************************************************
* THIS ROUTINE GRAPHS A FIELD  ON A BAR CHART
SET PIE=OFF
SET HAXIS=80, VAXIS=20, GRID=ON, VGRID=OFF
GRAPH FILE PTUBE
HEADING CENTER
"&TITLE1.A60.ENTER TITLE."
"&TITLE2.A60.MORE."
WRITE &FIELD1.A12.ENTER FIELD.
ACROSS TUBE_NO
IF INGOT_NO IS &VALUE3.A8.FINALLY ENTER INGOT NUMBER.
END
```

```
************************************************************
*                                                          *
*                      PGRAPH4.FEX                         *
*                                                          *
************************************************************
* THIS ROUTINE GRAPHS TWO COMPUTABLE FIELDS ON A BAR CHART
SET HAXIS=80, VAXIS=20, GRID=ON
GRAPH FILE PTUBE
HEADING CENTER
"SAMPLE GRAPH FOR PTUBE DATABASE "
"AUGUST 26, 1985"
WRITE YS AS YIELD_STRESS
AND   UTS AS U.T.S.
ACROSS TUBE_NO
IF INGOT_NO IS 555
END
-RUN
GRAPH FILE PTUBE
WRITE YS AS YIELD_STRESS
AND UTS AS U.T.S. AND CORROS AS CORROSION_WT_GA
ACROSS INGOT_NO
IF INGOT_NO GT 5555
END
-RUN
```

```
-**************************************************************************
-*                                                                        *
-*                              PMENU.FEX                                 *
-*                                                                        *
-**************************************************************************
-*      THIS IS THE PRIMARY MENU CONTROLLING ALL ASPECTS OF THE PRESSURE   *
-*    TUBE DATABASE, AND CAN BE EXECUTED BY TYPING 'MENU'. (ALSO IN PROFILE) *
-**************************************************************************
-*                                                                        *
-*                  PROGRAM MODIFIED BY JAMES LIZOTTE                     *
-*                              JULY 1986                                 *
-*                                                                        *
-**************************************************************************
-SET &MSG = '                                    ';
-MAINMENU
-SET &OPT = '  ';
-SET &T= '           XX            EXIT
-SET &&TUBE_NO = '          ';
-SET &&POSITION = '        ';
-CRTFORM
-"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-":                      PRESSURE TUBE DATABASE                           :"
-":  DATE: <D.&DATE        MAIN SELECTION MENU          TIME: <D.&TOD <75 :"
-"GDDDDDDDDDDDDDDDDDDDDDBDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD6"
-":          OPTION         3           FUNCTION                           :"
-"GDDDDDDDDDDDDDDDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD6"
-":              01            INPUT NEW RECORDS (CRT)                     :"
-":              02            INPUT NEW RECORDS (FILE)                    :"
-":              03            BROWSE DATABASE                             :"
-":              04            UPDATE INGOT INFORMATION                    :"
-":              05            INPUT NEW PRESSURE TUBE                     :"
-":              06            UPDATE PRESSURE TUBE                        :"
-":              07            DELETE PRESSURE TUBE                        :"
-":              08            REMOVE PRESSURE TUBE                        :"
-":              09            RETRIEVE DATA (REPORT REQUEST)              :"
-":              10            CUSTOMIZED GRAPHING                         :"
-":              11            MOVING THE PRESSURE TUBE DATA BASE/APPLICATIONS :"
-":              12            BACKUP/RECOVERY ROUTINE                     :"
-": <.U.D.&T <75 :"
-":          SELECT OPTION ====><&OPT          THEN PRESS 'ENTER'  <75 :"
-" "
-"                  <D.&MSG"
-SET &FUNC = DECODE &OPT (01 'EX PTINPUT'
-                         02 'EX PTRANS'
-                         03 'EX PBROWSE'
-                         04 'EX PINGUP'
-                         05 'EX PTADDSEG'
-                         06 'EX PTUPDAT'
-                         07 'EX PTDELSEG'
-                         08 'EX PREMOVE'
-                         09 'EX PSHOW'
-                         10 'EX PGRAPH'
-                         11 'EX PTMOVE'
-                         12 'EX PTBACREC'
-                               XX 'EXIT'
-                                ELSE 'MAINMENU');
-SET &MSG = IF &FUNC EQ 'MAINMENU' THEN '** INVALID OPTION -REENTER ** '
-                                          ELSE &FUNC;
-IF &FUNC EQ 'EXIT' OR 'MAINMENU'   THEN GOTO &FUNC;
&FUNC
-RUN
-GOTO MAINMENU
-EXIT
```

```
*****************************************************************************
*
*                                   PTBACREC.FEX
*
*****************************************************************************
* THIS PROGRAM PERFORMS A BACKUP AND/OR RECOVERY OF THE PRESSURE TUBE DATA
* BASE.THIS IS TO PROVIDE DATA SECURITY WHILE MAINTAINING DATA INTEGRITY.
*****************************************************************************
*
*                         PROGRAM WRITTEN BY JAMES LIZOTTE
*                                   JULY 1986
*
*****************************************************************************
-SET &ACTION=' ';
-SET &FUNC='                    ';
-CRTFORM LINE 1
-"     IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-"     :                                                                    : "
-"     :                WELCOME TO THE BACKUP/RECOVERY ROUTINE             :"
-"     :                  FOR THE PRESSURE TUBE DATABASE.                  :"
-"     :                                                                   : "
-"     :                  DATA BASE BACKUP OR RECOVERY ROUTINES CAN BE     : "
-"     :                  ACCESSED VIA THIS ROUTINE.                       : "
-"     :                                                                   : "
-"     :                  PLEASE CHOOSE THE DESIRED OPTION BELOW:          :"
-"     :                                                                   : "
-"     :                      ENTER - B - FOR BACKUP PROCEDURE             :"
-"     :                      ENTER - R - FOR RECOVERY PROCEDURE           :"
-"     :                                                                   :"
-"     :                         ENTER OPTION: <&ACTION     <73 :"
-"     :                                                                   :"
-"     HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-SET &FUNC =DECODE &ACTION ('B' 'EX PTBACK'
-                          'R' 'EX PTREC');
&FUNC

-EXIT
END
```

```
*******************************************************************************
*
*                                PTBACK.FEX
*
*******************************************************************************
* THIS PROGRAM PERFORMS A BACKUP OF THE PRESSURE TUBE DATBASE. THE  DATA BASE
*   BACKUP IS TO PROVIDE DATA SECURITY WHILE MAINTAINING DATA INTEGRITY.
*******************************************************************************
*
*                        PROGRAM WRITTEN BY JAMES LIZOTTE
*                                   JULY 1986
*
*******************************************************************************
-BACK
-SET &ACTION=' ';
-CRTFORM LINE 1
-"    IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-"    :                                                                    :  "
-"    :                  WELCOME TO THE  BACKUP PROCEDURE                  :"
-"    :                  FOR THE PRESSURE TUBE  DATA BASE.                 :"
-"    :                                                                    :  "
-"    :               PLEASE INSERT EMPTY DISK INTO DRIVE A:               :"
-"    :                                                                    :  "
-"    :                   ENTER - B - TO CONTINUE BACKUP PROCEDURE         :"
-"    :                   ENTER - X - TO EXIT TO MENU                      :"
-"    :                                                                    :"
-"    :                      ENTER OPTION: <&ACTION     <73 :"
-"    :                                                                    :"
-"    HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-IF &ACTION EQ 'X' THEN GOTO EXIT;
-IF &ACTION NE 'B' THEN GOTO BACK;
DOS COPY PTUBE.MAS  A:\
DOS COPY PTUBE.FOC  A:\
-EXIT
END
```

```
**************************************************************************
*                                                                        *
*                            PROFILE.FEX                                 *
*                      ( STORED AS PTPROF.FEX )                          *
*          (USED AS PROFILE WHEN SETTING UP PRESSURE TUBE  DATA BASE     *
*           AS A MINI SYSTEM.)                                           *
**************************************************************************
*                                                                        *
*   THIS PROGRAM IS EXECUTED UPON ENTRY INTO FOCUS AND SETS THE INITIAL  *
*      PARAMETERS IN THE PROGRAM AS WELL AS ACTIVATING THE USERS PASSWORD!  *
*                                                                        *
**************************************************************************
*                                                                        *
*                     PROGRAM WRITTEN BY JAMES LIZOTTE                   *
*                              JULY 1986                                 *
*                                                                        *
**************************************************************************
SET MSG=OFF
-SET &FUNC='          ';
-SET &CHOICE=' ';
-SET &PASS='        ';
-CRTFORM
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-" :                                                                    :"
-" :                          WELCOME TO FOCUS                          :"
-" :                        MMMMMMMMMMMMMMMMMMMM                        :"
-" :                                                                    :"
-" :              FOR SECURITY REASONS , YOU ARE KINDLY REQUESTED TO    :"
-" :          ENTER YOUR PASSWORD IN THE SPACE PROVIDED BELOW.          :"
-" :                                                                    :"
-" :                                        ---- THANK YOU ----         :"
-" :                                                                    :"
-" :                     PASSWORD:<&PASS                              :"
-" :                                                                    :"
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
SET PASS=&PASS
-START2
-CRTFORM LINE 1
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-" :                                                                    :"
-" :                         MAKE YOUR SELECTION                        :"
-" :                        MMMMMMMMMMMMMMMMMMMMM                       :"
-" :                                                                    :"
-" :          ENTER - M - TO VIEW THE PRESSURE TUBE DATA BASE MENU      :"
-" :          ENTER - X - TO EXIT TO DOS                                :"
-" :                                                                    :"
-" :                              IMMM;                                 :"
-" :                  SELECTION:  :<&CHOICE <38 :    <74 :"
-" :                              HMMM<                                 :"
-" :                                                                    :"
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-SET &FUNC = DECODE &CHOICE (M 'EX PMENU'
-                           X 'FIN'
-                           ELSE 'EX PROFILE');
```

```
&FUNC
-RUN
-GOTO START2
-EXIT
```

```
****************************************************************************
*
*                                PTMOVE.FEX
*
****************************************************************************
*     THIS PROGRAM ALLOWS THE USER TO LOAD THE PRESSURE TUBE DATA BASE  AND
* APPLICATIONS ONTO A FLOPPY DISK FOR BACKUP PURPOSES AND/OR FOR SUBSEQUENT
* LOADING ONTO ANOTHER PC (EQUIPPED WITH PC/FOCUS).
****************************************************************************
*
*                       PROGRAM WRITTEN BY JAMES LIZOTTE
*                                JULY 1986
*
****************************************************************************
-START
-SET &ACTION=' ';
-CRTFORM LINE 1
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;'
-" :                     WELCOME TO THE MOVING PROCEDURE                    :'
-" :                    DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD                    :"
-" :                                                                        :"
-" :     THIS PROCEDURE WILL ALLOW YOU TO LOAD THE PRESSURE TUBE DATA BASE   :"
-" :     AND ALL THE RELATED SUPPORT ROUTINES ONTO FLOPPY DISKS  WHICH CAN   :"
-" :     THEN BE LOADED ONTO ANOTHER PC (EQUIPPED WITH PC/FOCUS) AND        :"
-" :     USED FREELY.                                                       :"
-" :                                                                        :"
-" :          IF YOU WISH TO CONTINUE: 1)  TURN THE PRINTER ON (ONLINE)     :"
-" :                                   2)  INSERT A FLOPPY DISK INTO DRIVE B :"
-" :                                   3)  ENTER THE DESIRED CHOICE BELOW    :"
-" :                                                                        :"
-" :                ENTER - M - TO CONTINUE THE MOVE PROCEDURE.             :"
-" :                ENTER - X - TO EXIT TO PRESSURE TUBE MENU.              :"
-" :                            CHOICE: <&ACTION  <75 :"
-" :                                                                        :"
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-IF &ACTION EQ 'X' THEN GOTO EXIT;
-IF &ACTION NE 'M' THEN GOTO START;
DOS COPY PTUBE.MAS B:\
DOS COPY PTUBE.FOC B:\
DOS COPY PMOVE.FOC B:\
DOS COPY PMOVE.MAS B:\
-RUN
-PART2
-CRTFORM LINE 1
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-" :                                                                        :"
-" :                                                                        :"
-" :                                                                        :"
-" :           PLEASE INSERT A NEW FORMATTED DISK INTO DRIVE B:             :"
-" :                                                                        :"
-" :           (MARK THE DISK YOU REMOVE AS THE DATA BASE DISK)             :"
-" :                                                                        :"
-" :                                                                        :"
-" :                                                                        :"
-" :                                                                    :'
-" :                                                                    :'
-" :                                                                    :'
-" :               PRESS ENTER WHEN NEW DISK INSERTED!                  :'
-" :                                                                    :'
-" :                                                                    :'
-" :                                                                    :'
-" :                                                                    :'
-" :                                                                    :'
-" :                                                                    :'
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<'
DOS COPY PMENU.FEX B:\
DOS COPY PTPROF.FEX B:\
DOS COPY PTMOVE.FEX B:\
DOS COPY PTMOVIN.DAT B:\
DOS COPY PTRANS.FEX B:\
DOS COPY PTINPUT.FEX B:\
DOS COPY PREMOVE.FEX B:\
DOS COPY PTUPDAT.FEX B:\
DOS COPY PINGUP.FEX B:\
DOS COPY PTDELSEG.FEX B:\
DOS COPY PTADDSEG.FEX B:\
DOS COPY PSHOW.FEX B:\
DOS COPY PBROWSE.FEX B:\
DOS COPY PGRAPH.FEX B:\
DOS COPY PCOLOR.FEX B:\
DOS COPY PTBACREC.FEX B:\
DOS COPY PTBACK.FEX B:\
DOS COPY PTREC.FEX  B:\
DOS COPY PGRAPH1.FEX B:\
DOS COPY PGRAPH2.FEX B:\
DOS COPY PGRAPH3.FEX  B:\
DOS COPY PGRAPH4.FEX B:\
-RUN
-CRTFORM LINE 1
-" </10"
-"                  HIT CTRL-PRTSC  AND THEN HIT ENTER"
-"                    FOR A COPY OF THE INSTRUCTIONS"
DOS TYPE PTMOVIN.DAT
-RUN
-CRTFORM LINE 1
-"</10"
-"                  INSTRUCTIONS ARE BEING PRINTED"
-"           HIT CTRL-PRTSC AND THEN HIT ENTER ONCE AGAIN"
-EXIT
```

```
*************************
* J.LIZOTTE JULY 1986   *
******************************************************************************
******************************************************************************

              INSTRUCTIONS TO MOVE PRESSURE TUBE DATA BASE
                        AND SUPPORT APPLICATIONS

******************************************************************************
******************************************************************************


    PLEASE RETAIN THESE INSTRUCTIONS TO AID YOU IN LOADING THE PRESSURE TUBE
    DATA BASE AND SUPPORT APPLICATIONS ONTO ANOTHER PC.
            (PROVIDED IT HAS HAD PC/FOCUS INSTALLED).


   YOU WILL NEED :
  *****************


                 1) THE APPLICATIONS FLOPPIES PRODUCED BY THIS ROUTINE.

                 2) THE PC/FOCUS ACTIVATOR DISK.

                 3) THIS LIST OF INSTRUCTIONS.

   PROCEDURE
****************
                 1) ASSUMING MACHINE HAS BEEN TURNED ON, . .

                 2) (IF REQUIRED ,LOAD DOS INTO MACHINE)

                 3) INSERT APPLICATIONS FLOPPY INTO DRIVE B.

                 4) ISSUE THE COMMAND . . COPY B:\ C:\ . . THEN PRESS ENTER

                 5) ISSUE THE COMMAND . RENAME PTPROF.FEX PROFILE.FEX

                 6) INSERT THE DATA BASE FLOPPY INTO DRIVE A.

                 7) ISSUE THE COMMAND . . COPY A:\ C:\ . . THEN PRESS ENTER.

                 8) YOU CAN NOW USE THE PC/FOCUS ACTIVATOR DISK TO ENTER
                    PC/FOCUS AND USE THE PRESSURE TUBE DATABASE
                    AND SUPPORT APPLICATIONS.

      *** NOTE STEPS 3-7 ARE TO BE COMPLETED ONLY ONCE. YOU CAN THEN USE
        THE APPLICATIONS EVERY TIME YOU ENTER PC/FOCUS.

******************************************************************************
******************************************************************************
```

AUXILIARY ROUTINES

AUXILIARY_ROUTINES

Presented below is a listing of the auxiliary routines for the data base system. It is important to note that when viewing hard copies of the routines , some of the special characters which are supported in focus are not recognized on the printer. This explains many of the characters which seem to form borders around the input areas. These are actually borders on the crt output.

ROUTINE_NAME	PAGE_NUMBER
PROFILE.FEX	223
INTRO.FEX	225
APLMOVE.FEX	227
TEXT FILE - AMOVIN.DAT	230

```
***************************************************************************
*                                                                         *
*                               PROFILE.FEX                               *
*                                                                         *
***************************************************************************
*                                                                         *
*    THIS PROGRAM IS EXECUTED UPON ENTRY INTO FOCUS AND SETS THE INITIAL  *
*       PARAMETERS IN THE PROGRAM AS WELL AS ACTIVATING THE USERS PASSWORD! *
*                                                                         *
***************************************************************************
*                                                                         *
*                     PROGRAM WRITTEN BY JAMES LIZOTTE                    *
*                                JUNE 1986                                *
*                                                                         *
***************************************************************************
SET MSG=OFF
-SET &COUNT=0;
-SET &NEXT= '     ';
-START
-SET &COUNT=&COUNT+1;
-IF &COUNT GE 4 THEN GOTO FIN;
-SET &FUNC='          ';
-SET &CHOICE=' ';
-SET &PASS='        ';
-CRTFORM
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-" :                                                                         :"
-" :                              WELCOME TO FOCUS                           :"
-" :                            MMMMMMMMMMMMMMMMMMMM                         :"
-" :                                                                         :"
-" :                 FOR SECURITY REASONS , YOU ARE KINDLY REQUESTED TO     :"
-" :           ENTER YOUR PASSWORD IN THE SPACE PROVIDED BELOW.              :"
-" :                                                                         :"
-" :                                           ---- THANK YOU ----           :"
-" :                                                                         :"
-" :                         PASSWORD:<.NODISP.&PASS <74 :"
-" :                                                                         :"
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-IF &PASS NE 'PROG1' OR 'ANDY' OR 'OLEV' THEN GOTO START;
SET PASS=&PASS
-START2
-CRTFORM LINE 1
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-" :                           PC/FOCUS DATA BASE SYSTEM                     :"
-" :                  FOR THE METALLURGICAL RESEARCH DEPARTMENT              :"
-" :                                  MAIN MENU                              :"
-" LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
-" :                                                                         :"
-" :                              MAKE YOUR SELECTION                        :"
-" :                             DDDDDDDDDDDDDDDDDDDD                        :"
-" :                                                                         :"
-" :          ENTER - T - TO VIEW THE PRESSURE TUBE DATABASE MENU            :"
-" :          ENTER - M - TO VIEW THE METAL PROPERTIES DATABASE MENU         :"
-" :          ENTER - P - TO VIEW THE PRESSURE TUBE PROPERTIES DATABASE MENU  :"
-" :       ENTER - I - TO VIEW INSTRUCTIONS                                :"
-" :       ENTER - C - TO MAKE A COPY OF THE APPLICATIONS                  :"
-" :       ENTER - X - TO EXIT TO DOS                                      :"
-" :                                                                       :"
-" :                               IMMM;                                   :"
-" :                   SELECTION:  :<&CHOICE <38 :    <74 :"
-" :                               HMMM<                                   :"
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-SET &FUNC = DECODE &CHOICE (T 'EX PMENU'
-                            M 'EX METMENU'
-                            P 'EX PROPMENU'
-                            I 'EX INTRO'
-                            C 'EX APLMOVE'
-                            X 'FIN'
-                            ELSE '            ');
&FUNC
-RUN
-GOTO START2
-FIN
-SET &NEXT =DECODE &COUNT( 4 'FIN'
-                          ELSE '   ');
-TYPE "YOU HAVE THRICE ENTERED AN INVALID PASSWORD"
-TYPE " 3 STRIKES . . . YOU'RE OUT!"
&NEXT
-EXIT
```

```
*****************************************************************************
*                                                                           *
*                              INTRO.FEX                                    *
*                                                                           *
*****************************************************************************
*                                                                           *
*    THIS ROUTINE PROVIDES THE USER WITH AN OVERVIEW OF THE DATA BASE       *
*   APPLICATIONS AND REFERENCES TO FURTHER INSTRUCTIONS.                    *
*                                                                           *
*****************************************************************************
*                                                                           *
*                   PROGRAM WRITTEN BY JAMES LIZOTTE                        *
*                              JUNE 1986                                    *
*                                                                           *
*****************************************************************************
-CRTFORM LINE 1
-"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-":                                                                         :"
-":            WELCOME TO THE FOCUS DATA BASE ENVIRONMENT FOR               :"
-":                THE METALLURGICAL RESEARCH DEPARTMENT.                   :"
-":                                                                         :"
-":             THIS APPLICATION HAS BEEN DESIGNED EXPLICITLY FOR USE BY    :"
-":     THE NON-DESTRUCTIVE AND FRACTURE EVALUATION SECTION.                :"
-":                                                                         :"
-":                                                                         :"
-":             THIS SECTION WILL LEAD YOU THROUGH THE THREE DATA BASES,    :"
-":     ALLOWING THE USER TO BROWSE,ADD,UPDATE AND DELETE RECORDS IN THE       :"
-":     DATA BASES.                                                         :"
-":                                                                         :"
-":                                                                         :"
-":                      --- PRESS F8 FOR MORE ---                          :"
-":                                                                         :"
-"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-" </3"
-"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-":                                                                         :"
-":     THE THREE DATA BASES ARE:                                           :"
-":                                                                         :"
-":      1) METALS PROPERTIES DATA BASE                                     :"
-":           - INCLUDES PROPERTIES AND TEST RESULTS ON ALLOYS.             :"
-":                                                                         :"
-":      2) PRESSURE TUBE DATA BASE                                         :"
-":          - CONTAINS DATA RECORDED FOR THE PRESSURE TUBES IN             :"
-":            ONTARIO HYDRO'S NUCLEAR GENERATING STATIONS.                 :"
-":                                                                         :"
-":      3) PRESSURE TUBE PROPERTIES DATA BASE                              :"
-":          - CONTAINS TEST RESULTS ON PRESSURE TUBE SPECIMENS TESTED.     :"
-":                                                                         :"
-":                                                                         :"
-":           ---- PRESS ENTER FOR FURTHER INSTRUCTIONS ---                 :"
-":                                                                         :"
-"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-CRTFORM
-"IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
```

```
-":                                                                        :"
-":          FOR FURTHER DOCUMENTATION REGARDING THE USE OF THESE           :"
-":     APPLICATIONS AND THE STRUCTURE OF THE DATA BASES REFER TO THE       :"
-":     FOLLOWING REPORTS:                                                  :"
-":                                                                        :"
-":        1) PC/FOCUS DATA BASE SYSTEM FOR THE METALLURGICAL RESEARCH     :"
-":           DEPARTMENT , USER'S GUIDE BY JAMES LIZOTTE.                  :"
-":                                                                        :"
-":                                                                        :"
-":        2) FOCUS/PC FOCUS DATA BASE DEVELOPMENT FOR METAL PROPERTIES    :"
-":           AND PRESSURE TUBE DATA BASES.                                :"
-":           REPORT # 85-253-K   , BY Z.PERKONS                           :"
-":                                                                        :"
-":            --- PRESS ENTER TO RETURN TO MAIN MENU ---                  :"
-":                                                                        :"
-"HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-EXIT
```

```
****************************************************************************
*
*                           APLMOVE.FEX
*
****************************************************************************
*    THIS PROGRAM ALLOWS THE USER TO LOAD THE DATABASE APPLICATIONS ONTO
*       FLOPPY DISKS FOR SUBSEQUENT LOADING ONTO ANOTHER PC.
****************************************************************************
*
*                  PROGRAM WRITTEN BY JAMES LIZOTTE
*                            JUNE 1986
*
****************************************************************************
-START
-SET &ACTION=' ';
-CRTFORM LINE 1
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;"
-" :                  WELCOME TO THE COPY PROCEDURE                         :"
-" :                DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD                          :"
-" :                                                                        :"
-" :         THIS PROCEDURE WILL ALLOW YOU TO LOAD THE THREE DATABASES'     :"
-" :           MASTER DESCRIPTIONS AND ALL THE RELATED SUPPORT ROUTINES      :"
-" :           ONTO FLOPPY DISKS WHICH CAN THEN BE LOADED ONTO ANOTHER PC   :"
-" :           (EQUIPPED WITH PC/FOCUS) AND USED FREELY.                    :"
-" :            YOU WILL NEED THREE FLOPPY DISKS IN ALL!                    :"
-" :                                                                        :"
-" :           IF YOU WISH TO CONTINUE: 1)  TURN THE PRINTER ON (ONLINE)    :"
-" :                                    2)  INSERT A FLOPPY DISK INTO DRIVE B :"
-" :                                    3)  ENTER THE DESIRED CHOICE BELOW   :"
-" :                                                                        :"
-" :                ENTER - C - TO CONTINUE THE COPY PROCEDURE.             :"
-" :                ENTER - X - TO EXIT TO MAIN MENU.                       :"
-" :                          CHOICE: <&ACTION  <75 :"
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
-IF &ACTION EQ 'X' THEN GOTO EXIT;
-IF &ACTION NE 'C' THEN GOTO START;
DOS COPY METALS.MAS B:METALS.MAS
DOS COPY METMENU.FEX B:METMENU.FEX
DOS COPY ALTPROF.FEX B:\
DOS COPY MCONTROL.FEX B:\
DOS COPY DELMET.FEX B:\
DOS COPY MDINPUT.FEX B:\
DOS COPY MBROWSE.FEX B:\
DOS COPY MBACKUP.FEX B:\
DOS COPY MRECOVER.FEX B:\
DOS COPY METTAB.FEX B:\
DOS COPY STREN.FEX B:\
DOS COPY LEFM.FEX B:\
DOS COPY EPFM.FEX B:\
DOS COPY FATIGUE.FEX B:\
DOS COPY STRESS.FEX B:\
DOS COPY TOUGH.FEX B:\
DOS COPY NDEPROP.FEX B:\
DOS COPY METMOVE.FEX  B:\
DOS COPY MOVINSTR.DAT B:\
-RUN
-PART2
-CRTFORM LINE 1
-" IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;
-" :                                                                              :
-" :                                                                              :
-" :                                                                              :
-" :             PLEASE INSERT A NEW FORMATTED DISK INTO DRIVE B:                 :
-" :                                                                              :
-" :                                                                              :
-" :                                                                              :
-" :                                                                              :
-" :                                                                              :
-" :                                                                              :
-" :                                                                              :
-" :                                                                              :
-" :                  PRESS ENTER WHEN NEW DISK INSERTED!                         :
-" :                                                                              :
-" :                                                                              :
-" :                                                                              :
-" :                                                                              :
-" :                                                                              :
-" HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<
DOS COPY P.MAS B:\
DOS COPY PROPMENU.FEX B:\
DOS COPY PROPROF.FEX B:\
DOS COPY PUPDATE.FEX B:\
DOS COPY DELETEP.FEX B:\
DOS COPY PIN.FEX B:\
DOS COPY PBROW.FEX B:\
DOS COPY PBACKUP.FEX B:\
DOS COPY PRECOV.FEX B:\
DOS COPY PMOVE.FEX  B:\
DOS COPY CHOOSREF.FEX B:\
DOS COPY REFTABLE.FEX B:\
DOS COPY REQ.FEX B:\
DOS COPY SCAN.FEX B:\
DOS COPY SCAN2.FEX B:\
DOS COPY PMOVIN.DAT B:\
DOS COPY PTRANS.FEX B:\
DOS COPY PTINPUT.FEX B:\
DOS COPY PREMOVE.FEX B:\
DOS COPY PMOVE.MAS B:\
DOS COPY PTMOVIN.DAT B:\
DOS COPY PTPROF.FEX B:\
DOS COPY PMOVE.FEX B:\
DOS COPY PMENU.FEX B:\
DOS COPY PTUPDAT.FEX B:\
DOS COPY PINGUP.FEX B:\
DOS COPY PTDELSEG.FEX B:\
DOS COPY PTADDSEG.FEX B:\
DOS COPY PSHOW.FEX B:\
DOS COPY PBROWSE.FEX B:\
DOS COPY PGRAPH.FEX B:\
DOS COPY PGRAPH1.FEX B:\
DOS COPY PGRAPH2.FEX B:\
DOS COPY PGRAPH3.FEX B:\
DOS COPY PGRAPH4.FEX B:\
DOS COPY PCOLOR.FEX B:\
DOS COPY PTUBE.MAS B:\
DOS COPY PROFILE.FEX B:\
DOS COPY INTRO.FEX B:\
DOS COPY APLMOVE.FEX B:\
DOS COPY AMOVIN.DAT B:\
DOS COPY PTBACREC.FEX B:\
DOS COPY PTBACK.FEX B:\
DOS COPY PTREC.FEX B:\
-RUN
-CRTFORM LINE 1
-" </10"
-"                    HIT CTRL-PRTSC  AND THEN HIT ENTER"
-"                       FOR A COPY OF THE INSTRUCTIONS"
DOS TYPE AMOVIN.DAT
-RUN
-CRTFORM LINE 1
-"</10"
-"                    INSTRUCTIONS ARE BEING PRINTED"
-"             HIT CTRL-PRTSC AND THEN HIT ENTER ONCE AGAIN"
-EXIT
```

```
**************************
* J.LIZOTTE JUNE 1986    *
*******************************************************************************
*******************************************************************************
```

INSTRUCTIONS TO SET UP THE DATA BASE SYSTEM ON ANOTHER PC

```
*******************************************************************************
*******************************************************************************
```

PLEASE RETAIN THESE INSTRUCTIONS TO AID YOU IN LOADING THE THREE DATABASE DESCRIPTIONS AND SUPPORT APPLICATIONS ONTO ANOTHER PC (EQUIPPED WITH PC/FOCUS)

BECAUSE OF THE NATURE AND POTENTIAL FOR GROWTH OF THE DATA BASES, IT IS QUITE POSSIBLE FOR THE DATA BASES TO BECOME TOO LARGE TO COPY OR IT MAY BE THAT THE USER MAY WANT TO SET UP THE DATA BASES FROM "SCRATCH". THIS CASE IS PRESENTED BELOW.

YOU WILL NEED :

```
*****************
```

1) THE DATABASE MASTER DESCRIPTIONS FLOPPY PRODUCED BY THIS ROUTINE.

2) THE APPLICATIONS FLOPPIES PRODUCED BY THIS ROUTINE.

3) THE PC/FOCUS ACTIVATOR DISK.

4) THIS LIST OF INSTRUCTIONS.

PROCEDURE

```
****************
```

1) ASSUMING MACHINE HAS BEEN TURNED ON, . .

2) ENTER FOCUS SUB DIRECTORY (I.E.   CD FOCUS <CR>).

3) INSERT FIRST APPLICATIONS FLOPPY INTO DRIVE A.

4) ISSUE THE COMMAND . . COPY A:\ C:\ . . THEN PRESS ENTER.

5) INSERT SECOND APPLICATIONS FLOPPY INTO DISK A.

6) ISSUE THE COMMAND . . COPY A:\ C:\ . .THEN PRESS ENTER.

7) WHEN COMPLETE ISSUE THE FOLLOWING COMMANDS:

```
CREATE FILE P      <CR>
CREATE FILE PTUBE  <CR>
CREATE FILE METALS <CR>
```

CREATE FILE PMOVE <CR>

8) YOU CAN NOW USE THE PC/FOCUS ACTIVATOR DISK TO ENTER PC/FOCUS AND USE THE DATABASES.

*** NOTE STEPS 3-7 ARE TO BE COMPLETED ONLY ONCE. YOU CAN THEN USE THE APPLICATIONS EVERY TIME YOU ENTER PC/FOCUS.

****
****

AN ALTERNATE OPTION IS THAT THE DATA BASES ARE SUFFICIENTLY COMPACT ENOUGH TO BE COPIED ONTO DISKS AND THE USER DESIRES THE EXISTING DATA BASES TO BE SET UP ONTO ANOTHER PC.

YOU WILL NEED :
****

1) BACKUP COPIES OF THE THREE DATA BASES (VIA THEIR SUB-MENUS)

2) THE APPLICATIONS FLOPPIES PRODUCED BY THIS ROUTINE.

3) THE PC/FOCUS ACTIVATOR DISK.

4) THIS LIST OF INSTRUCTIONS.

PROCEDURE
****

1) ASSUMING MACHINE HAS BEEN TURNED ON, . .

2) ENTER FOCUS SUB DIRECTORY (I.E. CD FOCUS <CR>).

3) INSERT FIRST APPLICATIONS FLOPPY INTO DRIVE A.

4) ISSUE THE COMMAND . . COPY A:\ C:\ . . THEN PRESS ENTER.

5) INSERT SECOND APPLICATIONS FLOPPY INTO DISK A.

6) ISSUE THE COMMAND . . COPY A:\ C:\ . .THEN PRESS ENTER.

7) WHEN COMPLETE INSERT ONE OF THE THREE DATA BASE BACKUP COPIES DISK INTO DRIVE A AND ISSUE THE COMMAND:

COPT A:\ C:\ . . AND PRESS ENTER

REPEAT STEP 7 FOR THE THREE BACKUP DISKETTES.

8) YOU CAN NOW USE THE PC/FOCUS ACTIVATOR DISK TO ENTER PC/FOCUS AND USE THE DATABASES.

*** NOTE STEPS 3-7 ARE TO BE COMPLETED ONLY ONCE. YOU CAN THEN USE THE APPLICATIONS EVERY TIME YOU ENTER PC/FOCUS.

****
****

APPENDIX A

PASSWORDS

With any data base system, data security and restricted access are the two most important aspects of the system. The need for data integrity necessitates some sort of restricted access to the system. The password facility in pc/focus allows data security and restricted access options to be included in the programmer's applications.

In pc/focus this restriction is known as DBA (DATA BASE ADMINISTRATOR). The data base administrator allows for passwords to be stored in the data base master description files. Storing them in the data base master description prevents access to the data base unless a valid password has been entered. Each password can be assigned the appropriate access rights such as read only, read and write . .etc. The coding appears at the end of the data base description, following the word end. The programmer or person in charge of maintaining the data base is labelled as the DBA and given a password which has no restrictions. Any other users can have restrictions imposed.
example:

```
DBA = MYPASS,$
USER=JOHN,ACCESS=RW,$
USER=JANE,ACCESS=R,$
```

Obviously if the passwords are listed in an easily accessable area, then this defeats the purpose of data security. PC/FOCUS therefore allows files to be encrypted. Encryption is simply a transformation of the file into an unreadable format. This hides the passwords , and the rest of the file description from the user. The encryption is accomplished by setting a password to encrypt the file and then issuing the encrypt command.
ex:

```
SET PASS=MYPASS   <CR>
ENCRYPT FILE MAGAZINE.MAS <CR>
```

A password is set before encrypting the file so that it can not be decrypted without entering the same password. It is then obvious that this password must be recalled in order to decrypt/encrypt the files. It is wise therefore to use the DBA password and to keep a record** of this password so as not to forget it.

In addition to the file restricting passwords our applications include a password entry/validity check sequence. This sequence is invoked in the profile. Upon entry to focus, the profile file prompts the user for a password. The user enters a password and if valid is permitted to use the system. If the password is invalid, the user can retry up to 3 times and then the system returns to DOS. The passwords are also listed in the profile to allow for the validity check, therefore the profile file is also encrypted.

The processes to change and add passwords are presented below.

CHANGING\ISSUING A PASSWORD

In order to change a password the following procedure must be followed.

(1) ENTER FOCUS AS USUAL

(2) IN RESPONSE TO THE PASSWORD PROMPT PRESS PF3. (YOU ARE NOW IN THE FOCUS COMMAND LEVEL.)

(3) TYPE IN THE FOLLOWING COMMANDS ,PRESSING ENTER AFTER EACH OF THEM.

```
SET PASS= current dba password**
DECRYPT FILE PROFILE.FEX
TED PROFILE***
```

** A LOG FOR THE CURRENT DBA IS FOUND ON THE LAST PAGE.
*** TED IS THE FOCUS TEXT EDITOR. SEE PC/FOCUS GUIDE TO OPERATIONS, SECTION 6 FOR FURTHER INSTRUCTIONS AS TO ITS USE.

(4) YOU CAN NOW EDIT THE FILE CALLED PROFILE TO INCLUDE THE NEW OR UPDATED PASSWORD. TO DO THIS ALTER LINE 39 AS DESIRED.
LINE 39 IS AS FOLLOWS:

```
-IF &PASS NE 'DBA' OR 'PASS1' OR 'PASS2' THEN GOTO START;
```

SIMPLY CHANGE THE DBA OR ONE OF THE PASSWORDS OR ADD A NEW PASSWORD.

(5) WHEN EDITTING IS COMPLETE AND THE FILE HAS BEEN SAVED, ENCRYPT THE PROFILE BY MEANS OF THE COMMMAND:

```
ENCRYPT FILE PROFILE.FEX   <CR>
```

(6) THE PASSWORD MUST NOW ALSO BE ADDED/UPDATED IN EACH OF THE THREE DATA BASE MASTER DESCRIPTIONS VIA THE FOLLOWING PROCESS:

```
DECRYPT FILE METALS.MAS  <CR>
TED METALS.MAS    <CR>
```

EDIT AND FILE THE MASTER DESCRIPTION WHEN THE PASSWORDS HAVE BEEN ENTERED AND/OR UPDATED AS REQUIRED.

```
ENCRYPT FILE METALS.MAS <CR>
```

(7) REPEAT STEP 6 FOR THE DATA BASE DESCRIPTION FILES PTUBE.MAS AND P.MAS.

THE PRECEEDING STEPS ARE ALL THAT IS REQUIRED TO ADD OR CHANGE A PASSWORD. IF THE DBA PASSWORD IS BEING CHANGED, REMEMBER TO RECORD THE NEW DBA VALUE IN THE TABLE AT THE BACK OF THIS GUIDE.

(8) YOU CAN NOW RETURN TO THE DATA BASE SYSTEM BY ISSUING THE COMMAND:

```
EX PROFILE <CR>
```

OR RETURN TO DOS BY THE COMMAND:

```
FIN <CR>
```

CURRENT DBA VALUE	DATE ISSUED	ISSUING AUTHORITY	INITIALS
PROG1	JULY/1986	JAMES LIZOTTE	J.L.